

ATTACHMENT 15

Declaration of Joseph L. Shelnutt (Aug. 16, 2023)

**IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
AUSTIN DIVISION**

UNITED STATES OF AMERICA,)	
)	
Plaintiff,)	Civil Action No.
)	1:23-cv-00853-DAE
v.)	
)	
GREG ABBOTT, in his capacity as GOVERNOR)	
OF THE STATE OF TEXAS, and THE STATE OF)	
TEXAS,)	
)	
Defendants.)	
)	

Declaration of Joseph L. Shelnut

I, Joseph L. Shelnut, declare, based on my personal observations, the following:

1. I am a Regulatory Project Manager in the Compliance and Enforcement Branch, Regulatory Division, for the U.S. Army Corps of Engineers (Corps), Fort Worth District. My responsibilities include evaluating permit applications under Section 10 of the Rivers and Harbors Act of 1899 and investigating possible unauthorized activities or activities that do not comply with previously issued permits in my Fort Worth District’s area of responsibility. That area of responsibility includes Maverick County, Texas and the segment of the Rio Grande in the county.

2. As part of my duties, I consider whether the Corps has jurisdiction over a particular water, in this case a segment of the Rio Grande, under Section 10 of the Rivers and Harbors Act. The Corps regulations at 33 C.F.R. § 329.16(a) state that “Tabulated lists of final determinations of navigability are to be maintained in each district office. . .” The “Navigable Waters of the United States in the Fort Worth, Albuquerque, and Tulsa Districts

Within the State of Texas” most recently dated December 20, 2011, is the relevant list for the portion of the Rio Grande covered by the Fort Worth District. This document is publicly available at: www.swf.usace.army.mil/Portals/47/docs/regulatory/NavList2011.pdf.

3. The Corps analysis supporting the navigability of the Rio Grande and its inclusion on the most recent 2011 list of Navigable Waters of the United States in Texas is in a March 31, 1975, determination by the Fort Worth District Engineer. Exhibit A is a true copy of that determination that the Fort Worth District maintains in the electronic Rio Grande Navigable Waterway file.
4. The District Engineer’s March 1975 determination relied on the Navigability Study, Rio Grande, Tributaries, and Lakes, Rio Grande Basin, River Mile 275.5 to 610.0 date March 1975 (“1975 Study”). Exhibit B is a true copy of the Navigability Study determination that the Fort Worth District maintains in the electronic Rio Grande Navigable Waterway file except that it does not contain Exhibits 27 or 28. Those are large size maps that are also maintained in the Rio Grande Navigable Waterway file and can be provided as needed.
5. The 1975 Study finds that in its then-current natural condition (meaning its natural condition with flows altered by the Amistad Dam) the Rio Grande from River Miles 275.5-610.0 is navigable during periods of sufficient flow by shallow draft craft, such as airboats. The natural condition of the river is defined by physical characteristics and obstructions. The physical characteristic factors the Corps considered include the: waterbody type, length, approximate discharge volumes, fall per mile, extent of tidal influence, range between ordinary high and ordinary low flows, and improvements to navigation. The Corps also considered the nature and location of significant obstructions to navigation, including the Falcon Dam and Amistad Dam.

6. There were no current plans to improve the Rio Grande for navigation when the Corps conducted the 1975 Study. The 1975 Study finds, however, that improvement of the Rio Grande is possible for the purpose of navigation. In addition to possible improvements, storage in the Falcon Dam and Amistad Dam would have to provide sufficient flow for the purpose of navigation.
7. I do not have knowledge of new federal or non-federal plans to improve navigation developed since 1975. Such plans may require Congressional authorization and could be undertaken by the federal government alone, in partnership with a non-federal sponsor, or could require a Rivers and Harbors Act Section 10 permit from the Corps.
8. Exhibits A and B to this declaration are the files I referred to in my August 7, 2023 deposition.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on August __, 2023, in Fort Worth, Texas.

SHELNUTT.JOSEP
H.LEE.1110608680

Digitally signed by
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Joseph L. Shelnutt

EXHIBIT A

MARCH 31, 1975 NAVIGABILITY

DETERMINATION OF USACE FORT

WORTH DISTRICT ENGINEER



DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102

REPLY TO
ATTENTION OF:

31 March 1975

SWFGC

SUBJECT: Navigability Study of the Rio Grande River (River Mile 275.5 to 610.0, Texas)

THRU: Division Engineer, Southwestern

TO: HQDA (DAEN-CWO-N)
WASH DC 20314

1. In compliance with paragraph 14.6 of ER 1165-2-302, dated 11 September 1972, we inclose a Report of Findings and an Opinion of the District Counsel in connection with the Rio Grande River, an international stream, from River Mile 275.5 to 610.0, together with tributaries thereto. River Mile (RM) 275.5 represents the jurisdictional boundary of the Galveston District and the Fort Worth District; River Mile 610.0 represents the jurisdictional boundary of the Albuquerque and Fort Worth Districts.

2. On the basis of the legal analysis and the supporting facts, I conclude the following:

a. The Rio Grande River between River Mile 275.5 and 610.0, on the United States side from the centerline of the normal channel, is a navigable water of the United States. See Article VII of the Treaty of Guadalupe Hidalgo (9 STAT. 928) dated 2 February 1848; U. S. v. Rio Grande Dam & Irrigation Co., 174 U.S. 690, 701, 19 Sup. Ct. 770, 774 (1899).

b. Falcon Reservoir at and below elevation 296.4 mean sea level and Amistad Reservoir at and below elevation 1117.0 feet mean sea level, on the United States side from the centerline of the normal channel, are navigable waters of the United States.

c. All tributaries to the Rio Grande River, on the United States side between RM 275.5 and 610.0, together with all lakes thereon, are non-navigable.



SWFGC

31 March 1975

SUBJECT: Navigability Study of the Rio Grande River (River Mile 275.5 to 610.0, Texas)

3. We anticipate no controversy in connection with the above declaration. The Galveston District's list of navigable waters dated 2 September 1971 contains the Rio Grande River as navigable up to RM 275.5 (Galveston/Fort Worth District's boundary). The Rio Grande River from RM 275.5 to 610 has been on the navigable list of the Fort Worth District from the time of the District's creation in 1950. The Albuquerque District considers the Rio Grande navigable within its jurisdiction up to RM 1171.3 (American Dam at El Paso, Texas).

4. We have coordinated our study with the legal department of the International Boundary and Water Commission, El Paso, Texas.

1 Incl (dupe)
Navigability Report

JOE H. SHEARD
Colonel, CE
District Engineer

Copies furnished w/incl:
SWGGC
SWAGC

> Ch, Op Div wo incl. *pm*

EXHIBIT B

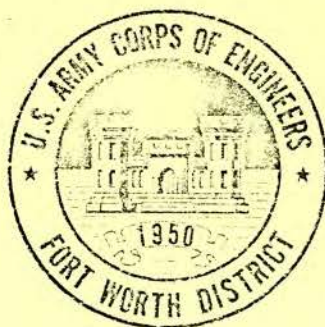
MARCH 1975 NAVIGABILITY STUDY

USACE FORT WORTH DISTRICT

NAVIGABILITY STUDY

RIO GRANDE, TRIBUTARIES, AND LAKES

RIO GRANDE BASIN RIVER MILE 275.5 TO 610.0



MARCH 1975

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Map of Rio Grande Basin	1
Profile, River Miles 0 to 615 (Extract from <u>Report on Survey of Santa Isabel Creek</u> , dated 1939)	2
Profile, River Miles 547 to 953 (Extract from report by International Boundary and Water Commission, dated 1951)	3
Listing of Obstructions (Extract from <u>List of Bridges Over the Navigable Waters of the United States</u> , dated 1941)	4
Extract from <u>Texas Water Development Board Report 48</u> , dated 1966	5
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Extract from Senate Document 65, 86th Congress, 1st Session	7
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Extract from <u>Rio Grande, River of Destiny</u> , dated 1949	11
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Extract from <u>People and Plots on the Rio Grande</u> , dated 1957	14

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<u>Description</u>	<u>EXHIBIT</u>
Notes on Early Steamboating in the <u>Southwestern Historical Quarterly</u> , dated 1945	15
Extract from <u>Great River</u> , dated 1954	16
Extract from <u>East Texas Riverboat Era and Its Decline</u> , dated 1965	17
Extract from <u>Galveston District Listing of Navigable Waterways</u> , dated 1971	18
Extracts from <u>Treaties and Other International Agreements of the United States of America</u> , Vol 9, dated 1972	19, 20, 21, 22, and 24
Extract from House Document 359, 71st Congress, 2d Session, dated 1930	23
Extract from <u>The Handbook of Texas</u> , dated 1952	25
List of early opinions (OCE) on waterways in Galveston District	26
Map of Falcon Reservoir prepared by A.I.D. Associates, Inc., 1975 Edition	27
Map of Amistad Reservoir prepared by A.I.D. Associates, Inc., 1974 Edition	28
Extract from Treaty to Resolve Pending Boundary Differences and Maintain the Rio Grande, etc., dated November 23, 1970	29

REPORT OF FINDINGS

NAVIGABILITY STUDY

RIO GRANDE, TRIBUTARIES, AND LAKES

RIO GRANDE BASIN, TEXAS

The reach under consideration lies within the boundaries of the Fort Worth District. The dividing line between the Fort Worth and Galveston Districts is the west line of Starr County, river mile 275.5. This is just upstream of the Falcon damsite. The dividing line between the Fort Worth and Albuquerque Districts is river mile 610.0, which is the upper limits of Amistad Reservoir. Certain data and comments are, of necessity, applicable to the entire basin.

1. Name of waterbody: Rio Grande, river miles 275.5 to 610.0.
2. Tributary to: Drains into the Gulf of Mexico a few miles east of Brownsville, Texas.

3. Physical characteristics:

- a. Type: The Rio Grande basin lies in the southwestern United States and northeastern Mexico. The drainage area is 182,215 square miles, of which 88,968 square miles are in the United States and 48,259 square miles in Texas. A portion of the basin in Mexico is non-contributing. The basin has an airline length of approximately 1,820 miles and a maximum width of 235 miles.

The streambed elevation varies from about elevation 12,000 feet mean sea level at its source to approximately elevation 3,000 feet at El Paso to sea level near Brownsville. The upper reaches are snow and spring fed while the reach in New Mexico is typically desert. The river is deeply incised in the Big Bend reach, where it flows through the magnificent Santa Elena, Mariscal, Vencente, and Boquillas canyons. The river is approximately 1,700 feet below the rim in the Mariscal canyon. In its lower reaches the river is a typical irregularly flowing stream found in semiarid climates. The sinuosity increases considerably and the flood plain becomes much wider. Exhibit 1 is a map showing the outline of the basin and other significant features.

- b. Length: The Rio Grande heads at the foot of the continental divide north of the San Juan Mountains in southern Colorado, flows south through New Mexico and enters Texas near El Paso. The International Boundary and Water Commission states the length as 1,896 miles, which is

considerably below the 2,200 mile figure often used. It forms the boundary between the United States and the Republic of Mexico for 889 to 1,248 miles, depending upon the method of measurement. Also, depending upon methods of measurement, the Rio Grande is the fourth or fifth longest North American River. It is the second longest river entirely within or bordering the United States.

c. Approximate discharge volumes: Data for this subsection is not included for gages above the Fort Worth District boundary.

Gage	: Max flow, cfs :		: Min flow, cfs :		: Mean flow, cfs (3)	
	:Discharge:	Date	:Discharge:	Date	:Discharge:	Per. of Rec.
Del Rio	1,140,000	Jun 54	176	Jul 68	2,280	1961-68
Eagle Pass	946,100	Jun 54	24	Jun 53	2,813	1948-68
Laredo	716,900	Jun 54	0	(1)	3,069	1948-68
Rio Grande City	220,000	Sep 67	0	(1)	3,726	1954-68
Brownsville	31,700	Oct 45	0	(2)	774	1954-68

(1) More than 1 occasion

(2) Numerous occasions

(3) Flows at Rio Grande City and Brownsville have been regulated by Falcon Reservoir since impoundment began in August 1953. Mean flow reflects regulation and diversions. Flows at Del Rio, Eagle Pass, and Laredo have been regulated by Amistad Reservoir since impoundment began in May 1968. Mean flow does not reflect regulation.

d. Fall per mile: The average fall is about 6.3 feet per mile. The fall for specific reaches is given in the following table.

Landmark	: Distance:		Approx. streambed: elevation (mean : reach : sea level) : (feet) : mile)	Fall in: reach : (feet) :	Avg. slope (feet per mile)
	:River:	in reach:			
Langtry Gage	613		1175		
		75		325	4.3
Del Rio	538		850		
		103		350	3.4
Selected Point	435		500		
		170		350	2.1
El Tigre Arroyo	265		150		
		265		160	0.6
Mouth	0		-10		

Neither a complete profile or a recent profile could be found. Exhibits 2 and 3 are partial profiles. There are minor discrepancies between these profiles and certain other data.

e. Extent of tidal influence: Not applicable to this report.

f. Range between ordinary high and ordinary low flows: Records are inadequate to develop actual or hypothetical ordinary high and ordinary low flows.

g. Improvements to navigation: There are not any improvements to navigation within the study reach.

4. Nature and location of significant obstructions to navigation:

The Rio Grande is obstructed by four highway and two railroad bridges in the study reach. Exhibit 4 gives data about several of these bridges. This listing does not show the Southern Pacific railroad bridge at Eagle Pass or the new highway bridge just downstream of Amistad Dam. The bridge at Zapata was removed because of the large width of Falcon Reservoir at the bridge's former location.

The river is blocked by the major Falcon Dam just downstream of the Fort Worth District boundary and by the major Amistad Dam near Del Rio. Exhibits 5 and 6 contain extensive data about these obstructions. There is a diversion dam and intake owned by the Maverick County Water Control and Improvement District No. 1 approximately 15 miles downstream of Del Rio. There are also several small diversion dams for supplying water to Mexican irrigators.

Exhibits 7, 8, 13, and 23 contain data about the river channel in the study reach. It is described as shifting and tortuous with relatively steep slopes except in the lowest reach. The presence of rapids in the lower reaches is noted in exhibit 13.

5. Authorized projects:

a. Nature, condition, and location of any improvements made under projects authorized by Congress: Several Soil Conservation Service structures authorized by Public Law 566 have been constructed on tributaries of the Rio Grande. The Falcon and Amistad Reservoirs, which are under the control of the International Boundary and Water Commission, are authorized projects. The Falcon damsite is located at river mile 270.5, 5 miles below the Fort Worth District's lower boundary. However, the major portion of the reservoir lies in the district. The Amistad damsite is located at river mile 567.0, approximately 12 miles upstream from Del Rio, Texas. Exhibits 5, 6, 27, and 28 contain additional data about these structures. The Amistad Dam was called Diablo Dam during planning.

b. Description of projects authorized but not constructed:

There are no known authorized projects in the reach under study. The 1944 treaty (also referred to as the 1945 treaty by some authors) with Mexico which ultimately led to the construction of the Falcon and Amistad Reservoirs does make provision for a third reservoir. However, topographic conditions at the site are very poor.

c. List of known survey documents or reports describing the waterbody: See exhibit 9 for listing.

d. Listing of books having information about the waterbody: See exhibit 10 for listing.

6. Past or present interstate commerce:

a. General type, extent, and period in time and b. Documentation:

To avoid confusion in some of the exhibits, it should be noted the Rio Grande has been known by many names. These include the Rio Bravo, Rio Bravo del Norte, Rio Grande del Norte, Rio del Norte, Rio San Guenaventura, Rio Ganapetuan, Rio Turbio, Posage, and Rio de las Palmas. Explorer Juan de Onate, who arrived on the banks near present day El Paso in 1598, is credited with naming the stream Rio Grande. The map in exhibit 11 shows most of the locations cited in this section.

The Rio Grande was the first Texas river on which steam navigation was attempted. (Exhibit 12). Henry Austin's Ariel was the ship. After a few months unsuccessful operation, the Ariel was moved to the Brazos River in August, 1830. In a letter written by a Mr. Elliot to Lord Aberdeen (Exhibit 13) in December of 1843, it is noted that in the winter and spring months the river would be navigable for great distances in light iron boats. It was also stated the river was ill fitted for general commercial use in the dry season due to rapids. Navigation in steamboats to the vicinity of Roma, Carmago, Mier, and Rio Grande City is cited in several books. (Exhibits 14, 15, 16, and 17)

The first practical navigation occurred during the Mexican-American War. General Zachary Taylor importuned the quartermaster for light steamboats for patrol and military transportation purposes. The Corvette, Whitesville, Major Brown, and Colonel Cross arrived from Pittsburgh in June, 1846. Other steamboats plying the Rio Grande at the time were the J. E. Roberts and the Brownsville.

Navigation was extended further upstream, as shown by this excerpt from Notes on Early Steamboating on the Rio Grande (Exhibit 15):

In October, 1846, a successful attempt was made to ascend the Rio Grande in the United States steamer Major Brown, by order of General Patterson, with a view to ascertain whether or not it were possible to open a communication between Carmargo and the Presidio del Norte. This vessel drew but two feet of water. She experienced few obstacles in reaching the river Salado, nearly a hundred miles by water above Mier. Above this there was a series of continued shoals, rocks and rapids, among which the boat repeatedly grounded. She at length reached Laredo, a town about six hundred miles by water above the mouth of the river.

This successful effort is also noted in exhibit 17 and briefly in exhibit 14. Exhibit 14 contains an account of bandits using river boats as a means of transportation to their next border town victim.

Great River (Exhibit 6) contains the following account of navigating to the Big Bend reach. This is the farthest upstream area of which an account was found.

One was about the system of supplying the river forts by boat. The head of steam navigation in the 1850's (and in fact until the twentieth century when the last steamer ran in 1907) was Roma. Goods were trans-shipped upriver to the forts by pack and wagon from there. But the report of an early quartermaster of Fort Brown was extraordinary, even though his claims and recommendations came to nothing, as so often happened with Army reports. First of all, until steamboats were released from wartime troop duty, he supplied the river garrisons by keelboat. And then in 1850 he sent an expedition up the river with orders to navigate to the farthest possible place. He hoped to discover that shipping could utilize far more of the river's length than it had so far done. A keelboat and a skiff, manned by sixteen men, ascended the river by channel to a point a thousand miles above the head of steam travel or about thirteen hundred miles above the mouth. It was an astonishing penetration for a river with so little water, and the expeditioners came back, all safe, to report optimistically that if the channel were improved in certain passages, steam navigation would be entirely feasible all the way "up to Babbitt's Falls." These falls were described as "not perpendicular, but a rapid descent of some 200 feet in about half a mile." They were walled in by a perpendicular gorge hundreds of feet high - so high, with such rocky darkness below the slit of sky overhead, that "the stars could be seen at mid-day."

It was a new piece of knowledge of the Rio Grande, and it may have described one of the canyons of the Big Bend. ---

The entire reach of the river within the Galveston District is classified as navigable (Exhibit 18).

7. Potential use for interstate commerce:

a. If in natural condition: The Rio Grande can be navigated during periods of sufficient flow only by fishing boats and other shallow draft craft. The data contained in the physical characteristics and obstructions to flow portions of section 3, as well as various exhibits, is indicative of the natural conditions which would have to be overcome.

b. If improved: Improvement of the Rio Grande for navigation is physically possible. Storage in the Falcon and Amistad Reservoirs would have to be judiciously used to provide sufficient flow for continuous navigation. Since navigation has fifth priority under existing treaties, there is little likelihood of change. The area is adequately served by other transportation modes, thus making economic justification appear doubtful. There would be serious ecological objections to any channelization.

8. Nature of jurisdiction known to have been exercised by Federal agencies, if any: The International Boundary and Water Commission has jurisdiction over the Rio Grande. The Rio Grande Compact Commission enforces the applicable statutes.

9. State or Federal Court decisions relating to navigability of the waterbody, if any:

The case of United States v. Rio Grande Dam and Irrigation Co. et al., 19 S. Ct. 770, refers to the navigability of the Rio Grande. The case was ultimately decided by the Supreme Court of the United States, on appeal from the Supreme Court of the Territory of New Mexico.

The Rio Grande Dam and Irrigation Company wanted to construct a dam across the river in the territory of New Mexico for the purpose of diverting waters for irrigation. The Attorney General of the United States, on May 24, 1897, filed a bill of complaint to prohibit the construction of this dam and the appropriation of water for the purpose of irrigation. A temporary injunction was issued on the filing of the bill. The Attorney General's arguments state that no authority had been given for the construction of the dam. He also set forth the treaty stipulations between the United States and the Republic of Mexico with reference to the navigability of the Rio Grande. The defendants denied that the river was susceptible

to navigation above Roma, Texas, or had been used beneficially for the purposes of navigation in the Territory of New Mexico, and that the contemplated use of the waters would deplete the flow so as to seriously obstruct the navigability of the river. The Territorial Court ruled in favor of the defendants, taking judicial notice that Rio Grande is not navigable within the Territory of New Mexico. The Attorney General then appealed the decision to the Supreme Court of the United States. The Supreme Court reversed and remanded the decision of the Territorial Court, stating

"Without pursuing this further we are of the opinion that there was error in the conclusion of the lower courts; that the decree must be reversed, and the case remanded with instructions to set aside the decree of dismissal, and to order an inquiry into the question whether the intended acts of the defendants in the construction of a dam and in appropriating the waters of the Rio Grande will substantially diminish the navigability of that stream within the limits of present navigability, and, if so, to enter a decree restraining those acts to the extent that they will so diminish."

The case referred to the seventh article of the Treaty of Guadalupe Hidalgo (February 2, 1848) and the fourth article of the Gasden Treaty (December 30, 1853). Briefly, the seventh article states navigation of the Bravo shall be free and common to the vessels and citizens of both countries and the fourth article sets the upper boundaries. Article seven and the applicable portion of article four are reprinted below. Exhibits 20 and 21 contain additional data on the respective treaties.

Note that the upper limit of navigability is set at the $31^{\circ} 47' 30''$ parallel of north latitude in the fourth article of the Gasden Treaty and at $31^{\circ} 47'$ in the first article of the Gasden Treaty. The court recognized the northernmost boundary.

ARTICLE VII, TREATY OF GUADALUPE HILDALGO

The river Gila, and the part of the Rio Bravo del Norte lying below the southern boundary of New Mexico, being, agreeably to the fifth Article, divided in the middle between the two Republics, the navigation of the Gila and of the Bravo below said boundary shall be free and common to the vessels and citizens of both countries; and neither shall, without the consent of the other, construct any work that may impede or interrupt, in whole or in part, the exercise of this right; not even the purpose of favoring

new methods of navigation. Nor shall any tax or contribution, under any denomination or title, be levied upon vessels or persons navigating the same, or upon merchandise or effects transported thereon, except in the case of landing upon one of their shores. If, for the purpose of making the said rivers navigable, or for maintaining them in such state, it should be necessary or advantageous to establish any tax or contribution, this shall not be done without the consent of both Governments.

The stipulations contained in the present Article shall not impair the territorial rights of either Republic, within its established limits.

ARTICLE 4th, GASDEN TREATY
(Portion)

The several Provisions, stipulations and restrictions contained in the 7th Article of the Treaty of Guadalupe Hidalgo, shall remain in force only so far as regards the Rio Bravo del Norte below the initial of the said Boundary provided in the First Article of this Treaty that is to say below the intersection of the 31° 47' 30" parallel of latitude with the Boundary Line established by the late Treaty dividing said river from its mouth upwards according to the 5th Article of the Treaty of Guadalupe. (Sic)

The navigable status of the Rio Grande is further recognized in the Treaty of November 12, 1884, Boundary Waters: Rio Grande and Rio Colorado, which is reprinted as Exhibit 22. This treaty was in effect until 1970.

Exhibit 23 suggests that the head of navigation was moved downstream to Fort Quitman (which is above the study area); however, a close reading of the Convention of 1906 (Exhibit 19) does not indicate a change in limits of navigability.

Several interesting points are contained in the treaty of February 3, 1944, Utilization of Waters of Colorado and Tujuana Rivers and of the Rio Grande. (Exhibits 24 and 25). This treaty recognized that prior treaties had dealt only with defining the border and with navigability and had not encompassed the subject of complementary usage of the discharges. Article three of this treaty expressly recognized joint usage of international waters with navigation having the fifth order of preference.

10. Remarks:

a. Tributaries: The principal tributaries on the Texas side are the Pecos and Devils Rivers, the Pecos being in the Albuquerque

District. The Devils River has a drainage area of 4,305 square miles or 2.36 percent of the total basin drainage area. This river had a maximum discharge at the Juno gage of 370,000 cubic feet per second (cfs) in September, 1932. The minimum discharge was 38 cfs in May, 1948, and the average discharge for the period of record (1925-49) was 196 cfs. The difference between the ordinary high and ordinary low flow is 1.54 feet. Amistad Reservoir backwater covers about 13 miles of the river including the former Lake Walk and Devils Lake. No record of navigation on this river was found. The river was ruled non-navigable on 31 March 1932 (Exhibit 26).

There are several other very small tributaries on the Texas side. These are San Felipe Creek (near Del Rio), Unnamed Tributary (Eagle Pass), Santa Isabel Creek (just upstream of Laredo) and Zacate and Chacon Creeks (Laredo). The drainage areas of these creeks are miniscule and there are many obstructions on Unnamed Tributary, Zacate, and Chacon Creeks. None are gaged and at best flow is intermittent.

b. Lakes and dams: The major international Falcon and Amistad dams have been mentioned several times. Reference is again made to exhibits 5, 6, 27, and 28 for pertinent data. Quite a bit of recreational use is made of these lakes. There are also several small diversion dams but their locations are not known. Country Club Dam (Casa Blanca Lake) lies north-east of Laredo on Chacon Creek. This is an off-channel lake with a capacity of 20,000 acre-feet.

11. Findings of Navigability (with date) and recommendations for determination:

It is determined as of 26 March 1975 that the Rio Grande from river mile 275.5 to 610.0 on the United States side from the centerline of the normal channel is navigable, and it is recommended that this portion of the Rio Grande be reaffirmed as a navigable water of the United States.

It is determined as of 26 March 1975 that Falcon Reservoir at and below elevation 296.4 feet mean sea level and Amistad Reservoir at and below elevation 1117.0 feet mean sea level, on the United States side from the centerline of the normal channel are navigable, and it is recommended that these portions of the named reservoirs be declared navigable waters of the United States.

Further, it is determined as of 26 March 1975, that all tributaries on the United States side between river miles 275.5 and 610.0 and lakes thereon are non-navigable and it is recommended that all tributaries on the United States side and lakes thereon be declared non-navigable waters.

OPINION OF DISTRICT COUNSEL
RIO GRANDE RIVER, TEXAS
RIVER MILE 275.5 to 610.0

The facts are set forth in pages 1 through 9 under Report of Findings (ROF). Additional supporting facts where needed are included herein. The area of the Rio Grande River under study is that portion of the Rio Grande River which falls within the jurisdiction of the Fort Worth District, covering River Mile (RM) 275.5 to 610.0. RM 275.5 represents the boundary of the Fort Worth/Galveston Districts or the west line of Starr County, just upstream of the Falcon dam. RM 610.0 is the boundary of the Fort Worth/Albuquerque Districts or the upper limits of Amistad Reservoir just below the mouth of the Pecos River. The Galveston District list of navigable waters dated 2 September 1971 contains the Rio Grande up to RM 275.5 (Exhibit 18). The Rio Grande River from RM 275.5 to 610 has been on the navigable list of the Fort Worth District from the time of the District's creation in 1950. The Albuquerque District considers the Rio Grande navigable within its jurisdiction up to RM 1171.3 (American Dam at El Paso, Texas).

1. Navigable by Treaty

Congress has the power ". . . to regulate Commerce with foreign nations, and among the several states . . ." U.S.C.A. Const. Art. 1, Sect. 8, Cl. 3. The President has power to make treaties with the advice and consent of the Senate, U.S.C.A. Const. Art. 2, Sect. 2, Cl. 2, provided it is not contrary to the Constitution. De Geofroy v. Riggs, 133 U.S. 258, 267, 10 S. Ct. 295 (1890). The Constitution declares a treaty to be the law of the land. U.S.C.A. Const. Art. 6, Cl. 2. A treaty is to be regarded as equivalent to an act of the Legislature, whenever treaty operates of itself, without aid of any legislative provision. Valentine v. U.S. ex rel. Neidecker, 299 U.S. 5, 10, 57 S. Ct. 100 (1936).

To preserve and protect the Rio Grande River, which forms the international boundary between Mexico and the United States along the Texas border, these two nations entered into a treaty well over a hundred years ago. Pertinent to navigation, Article VII of the Treaty of Guadalupe Hidalgo (9 STAT. 928) dated 2 February 1848 contained the provision that, below the southern boundary of New Mexico, the Rio Grande River shall remain common to vessels and citizens of both countries (Exhibit 20). In 1853, Article IV of the Gasden Treaty (10 STAT. 1034) dated December 30, 1853 affirmed the force and effect of Article VII of the earlier treaty (1848) as to the Rio Grande River only (Exhibit 21). Article IV further set the upper limits of navigability at the 31° 47' 30" parallel of latitude (ROF 7), which is below the southern boundary of New Mexico.

The navigable status of the Rio Grande is further recognized by Article V of the Convention of November 12, 1884 (24 STAT. 1011). See Exhibit 22. However, Article VIII.A. of the Treaty of November 23, 1970 abolished the 1884 convention but did not violate the provisions of earlier treaties

pertaining to navigation (Exhibit 29). It is reported that by the Convention of May 21, 1906 (34 STAT. 2953), the two nations formally agreed that ". . . along the river from El Paso to Fort Quitman navigation could be entirely eliminated and the water devoted to the more profitable service of irrigation." (Exhibit 23). It was further noted that the "spirit is dead, if not the letter," of those earlier provisions of the treaties which pertained to navigation. Admittedly, the provisions of the 1906 Convention permitted the equitable distribution of waters for irrigation purposes and disposed of claims arising by reason of diversion of waters between the Mexican Canal and Fort Quitman, but the 1906 Convention was silent on the effect of earlier treaties pertaining to navigation. Subsequently, in the Treaty of February 3 and November 1944 (59 STAT. 1219), the two countries agreed to construct two dams thereby expanding the uses of the Rio Grande (Exhibit 24) but it recognized the long standing Article VII of the 1848 treaty as to navigation. In fact, the nations specifically set navigation as the fifth order of preference in Article 3. This order of consumptive use was reaffirmed in Article III.F of the 1970 treaty (Exhibit 29). Therefore, no treaties or conventions were found which nullified Article VII of the 1848 treaty and Article IV of the 1853 treaty pertaining to navigation. It is therefore concluded that the Rio Grande River within the study area remains a navigable water of the United States.

2. U. S. Supreme Court Decision

The 1848 and 1853 treaties were discussed in U. S. v. Rio Grande Dam & Irrigation Co., 174 U.S. 690, 699-701, 19 Sup. Ct. 770, 773-4 (1899). In this case, defendants proposed a dam across the river in the territory of New Mexico for the purpose of irrigation. The Supreme Court held that the United States had a duty to its own citizens to preserve navigability and declined to consider whether the proposed construction was a violation of the above treaties. Id at 774. The Court distinguished jurisdiction for navigability purposes from determination of navigability. Accordingly, the Supreme Court reversed and remanded the case and ordered an ". . . inquiry into the question whether the intended acts of the defendants in the construction of a dam and in appropriating the waters of the Rio Grande will substantially diminish the navigability of that stream within the limits of present navigability. . . ." Id at 777.

In considering the point on judicial notice, the Court stated:

" It is reasonable that the courts take judicial notice that certain rivers are navigable and others not, for these are matters of general knowledge. But it is not so clear that it can fairly be said, in respect to a river known to be navigable, that it is, or ought to be, a matter of common knowledge at what particular place between its mouth and its source navigability ceases. And so it may well be doubted whether the courts will take judicial notice of that fact. It would seem that such a matter was one requiring evidence, and to be

"determined by proof. That the Rio Grande, speaking generally, is a navigable river, is clearly shown by the affidavits. It is also a matter of common knowledge, and therefore the courts may properly take judicial notice of that fact. But how many know how far up the stream navigability extends? Can it be said to be a matter of general knowledge, or one that ought to be generally known? If not, it should be determined by evidence. Examining the affidavits and other evidence introduced in this case, it is clear to us that the Rio Grande is not navigable within the limits of the territory of New Mexico. Id at 773."

Hence, the Court recognized that the Rio Grande was not a navigable stream within the territory of New Mexico. Id at 773.

At page 774, the Court alluded to the navigable portion and stated:

". . . but here the Rio Grande, so far as it is a navigable stream, lies as much within the territory of the United States as in that of Mexico, it being, where navigable, the boundary between the two nations, and the middle of the channel being the dividing line."

FINDINGS

Pased on the treaties between United States and Mexico together with the Rio Grande River case, we find that the Rio Grande River between River Miles 275.5 and 610 and north of the centerline of the normal channel is a navigable water of the United States.

3. Past, Present and Future Use (For record purposes only)

A stream is navigable if: ". . . (1) it presently is being used or is suitable for use, or (2) it has been used or was suitable for use in the past, or (3) it could be suitable for use in the future by reasonable improvements."

Rochester Gas and Electric Corp. v. FPC, 344 F.2d 594, 596 (2d Cir. 1965), cert. den., 382 U.S. 832 (1965). The position of the U. S. Supreme Court enunciated in U. S. v. The Steamer Montello, 87 U.S. (20 Wall.) 430, 441 (1872) as modified by U. S. v. Appalachian Electric Power Co., 311 U.S. 377, 409 (1941), is as follows:

"The capability of use by the public for purposes of transportation and commerce affords the true criterion of the navigability of a river, rather than the extent and manner of that use. If it be capable . . . of being used for purposes of commerce, no matter in what mode the commerce may be conducted, it is navigable in fact and becomes in law a public river or highway."

a. Past Use

As stated in the Report of Findings (ROF 4-5) and supporting Exhibits (11, 12, 14, 15, 16), a great deal of interest prevailed during the period between 1829 - 1882 pertaining to transportation of goods along the Rio Grande River. Steamboats frequented the Port of Roma (below the study area), which is believed to be the early head of steam navigation (Exhibits 14, 16). Cotton, war supplies, and other goods as well as troops made up the items of commerce. The military need for navigation ended in 1848 with the signing of the Treaty of Guadalupe Hidalgo, heretofore discussed. To a lesser extent river navigation was vital to the life style of the area up to Laredo (about RM 320), which is only about 45 miles above the Fort Worth/Galveston boundary. See Exhibits 14, 17.

Above Laredo up to Eagle Pass (about RM 475), navigation was impeded by rocks and ledges at low water stages. Conflicting reports reveal sufficient interest and available commerce to accommodate river travel above Laredo but actual accounts of commercial travel are lacking.

It is reported that ". . . the Rio Grande would be navigable for a great distance in light iron boats. . ." in the spring and winter months (Exhibit 13). But, at normal stages the river apparently was not navigable above Rio Grande City which is below Roma (Exhibit 14). Following one expedition up the Rio Grande in the late 1800's it was determined that the Rio Grande was susceptible to be improved for steam navigation up to Babbitt's Falls (probably RM 750). However, no action was ever taken to accomplish this proposal (Exhibit 16). Another account suggested that the Rio Grande " . . . was believed to be navigable for 500 miles above Laredo. . ." (Exhibit 17), which is above the study area. Further, there apparently has never been any "practical navigation" between Roma (about RM 225) and El Paso, a distance of about 1000 miles (Exhibit 23). Moreover, it is clear that the advent of railroads in 1882 led to the decline and eventual extinction of commercial navigation on the Rio Grande. "Improvements in the methods of water transportation or increased cost in other methods of transportation may restore the usefulness of this stream; since it is a natural interstate [and international] waterway, it is within the power of Congress to improve it at the public expense. . ." Economy Light and Power Co. v. U. S., 256 U.S. 113, 124 (1921).

The difficulty in pinpointing the precise head of navigation from a historical standpoint stems from the sketchy accounts on use. As noted above, an expedition took place in 1850 in a keelboat and a skiff manned by sixteen men who penetrated to a reported distance of 1000 miles (Exhibit 16) above the head of steam travel (Roma). There is no showing that substantial items of commerce were shipped from this point. These pioneer quartermasters believed that it would be practical to extend steam navigation further upstream by improving the channel in certain passages. In light of the treaties and the Rio Grande case heretofore discussed, it appears unnecessary to determine whether sufficient past use occurred in the study area to meet the test as set forth in Rochester Gas case, supra.

b. Present Use

At present, there is no commercial activity occurring within the study area which would qualify as substantial items of commerce. However, there is frequent use of pleasure and fishing boats on Falcon and Amistad Reservoirs (Exhibits 27 and 28).

Above the study area there is increasing interest for canoeing and float trips. The river gets its water from a tributary, the Rio Conchos, which adds substantial flow to the river in the Presidio area (about RM 850). The Texas Parks and Wildlife Department has recommended that the Rio Grande from Presidio to Lajistas (50 miles) be classified as a scenic waterway and from Lajitas to Langtry (243 miles) be classified as a wild waterway. See generally, Texas Waterways, by Texas Parks & Wildlife Department dated November 1973. These portions of the Rio Grande are in the Big Bend area, which is a few miles above the Amistad Reservoir. Below Amistad to Falcon Reservoir, there is some recreational boating along this controlled waterway which depends on water releases.

In reviewing the several cases on recreational craft as the sole ingredient of navigation, it appears that the Rio Grande River within the study area does not meet the present use test as laid down in the Rochester case, supra.

c. Future Use

There are no authorized plans to improve the Rio Grande River for navigation in the area of study. The natural and ordinary condition of the Rio Grande River, its volume of water, gradient and regularity of flow do not preclude future improvement for smaller commercial craft (ROF 6).

4. Tributaries and Lakes

"Federal regulatory jurisdiction . . . extends laterally over the entire water surface and bed of a navigable water body, which includes all the land and water below the ordinary high water mark." According to paragraph 11 of ER 1165-2-302, the ordinary high water mark for Falcon Reservoir is the normal conservation pool level, or 296.4 feet above sea level (Exhibit 27). For Amistad Reservoir, the normal conservation pool level is 1117 feet (Exhibit 25).

The extent of present use at these two reservoirs is limited to pleasure boating and fishing. Several mariners offer boats for hire with motors (see directory on Exhibits 27 & 28). Capacity for a wider use is evident by data contained in Exhibits 5, 27, and 28).

Federal courts generally take the position that large lakes are navigable when they lie in two states. Stallworth v. McFarland (Admiralty), 350 F.Supp 920, 925 (W.D. La, 1972); Welborn Boat Co. v. Fireman's Fund Ins. Co. (Admiralty), 201 F.2d 833 (5th Cir. 1953); Davis v. U. S. (Regulatory),

185 F.2d 938, 943 (9th Cir. 1950), cert. den., 340 U.S. 932 (1951). Both Amistad and Falcon Reservoirs inundate parts of two countries, the United States and Mexico.

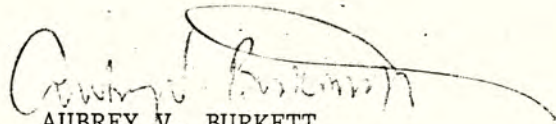
An examination of the principal tributary, Devil's River, (ROF 8) in the study area revealed no data which supports a finding that this tributary has been used, is presently being used, or is susceptible for use in the future for interstate commerce. This stream is a small, limited and restricted body of water with a normal discharge of only 196 cfs (ROF 8). Devil's River was declared non-navigable by the Chief of Engineer on 31 March 1932 (Exhibit 26). There is no evidence available that suggests that this opinion of non-navigability should be altered.

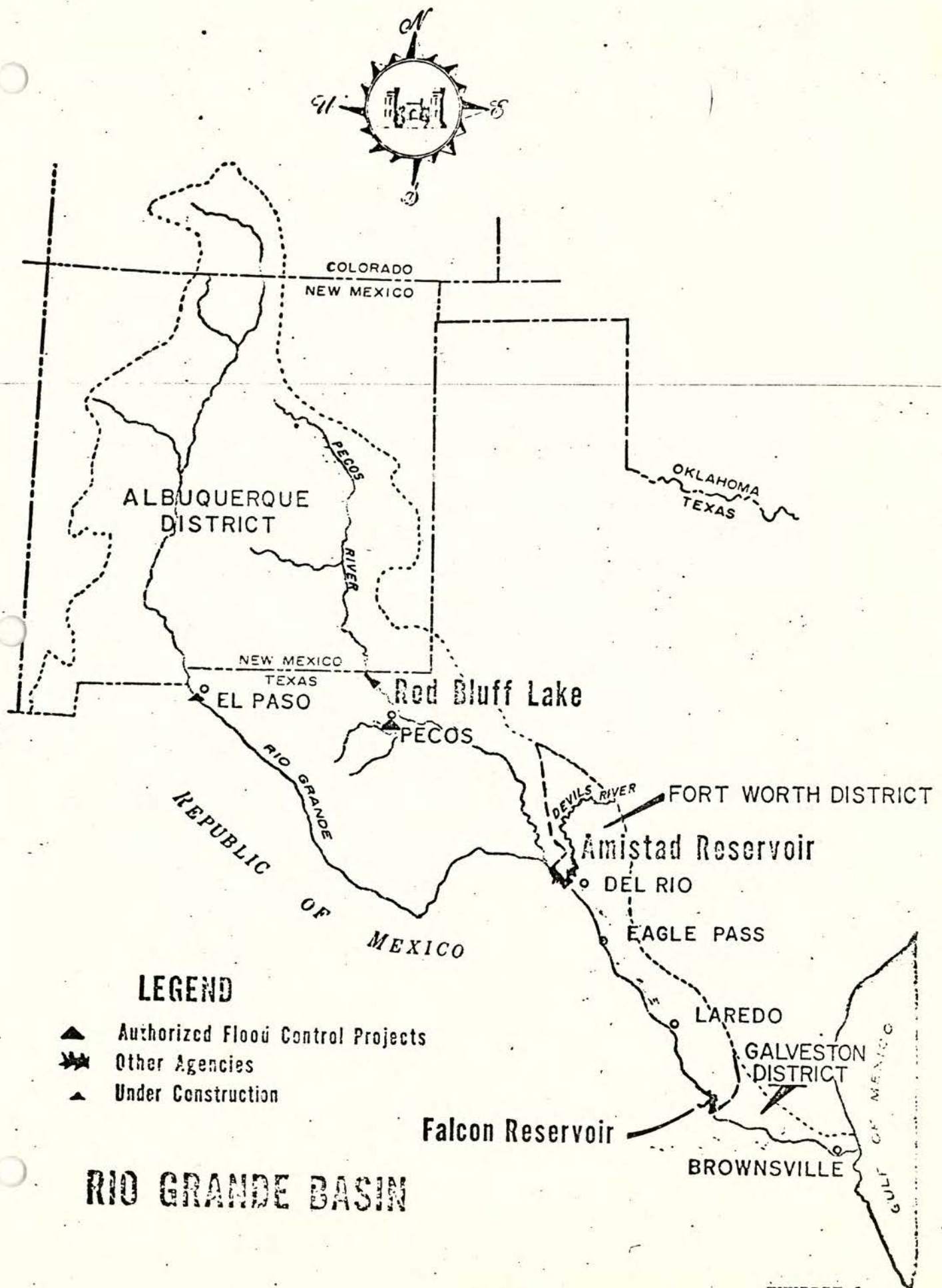
It is evident from the Report of Findings, page 9, that the smaller tributaries between RM 275.5 and 610 lack capacity for navigation. Further, no evidence was found showing that these small tributaries had been used, are being used, or are susceptible for use in the future for transporting interstate commerce.

FINDINGS

Based on the facts presented, coupled with existing legal precedents, we find Falcon Reservoir (at and below 296.4 feet elevation) and Amistad Reservoir (at and below 1117 feet elevation) north of centerline of their respective normal channels to be navigable waters of the United States; we find that all northern tributaries on the United States side to the Rio Grande between River Miles 275.5 and 610.0, together with lakes thereon, should not be regarded as navigable waters of the United States. See page 12 for other findings.

26 March 1975


AUBREY V. BURKETT
District Counsel



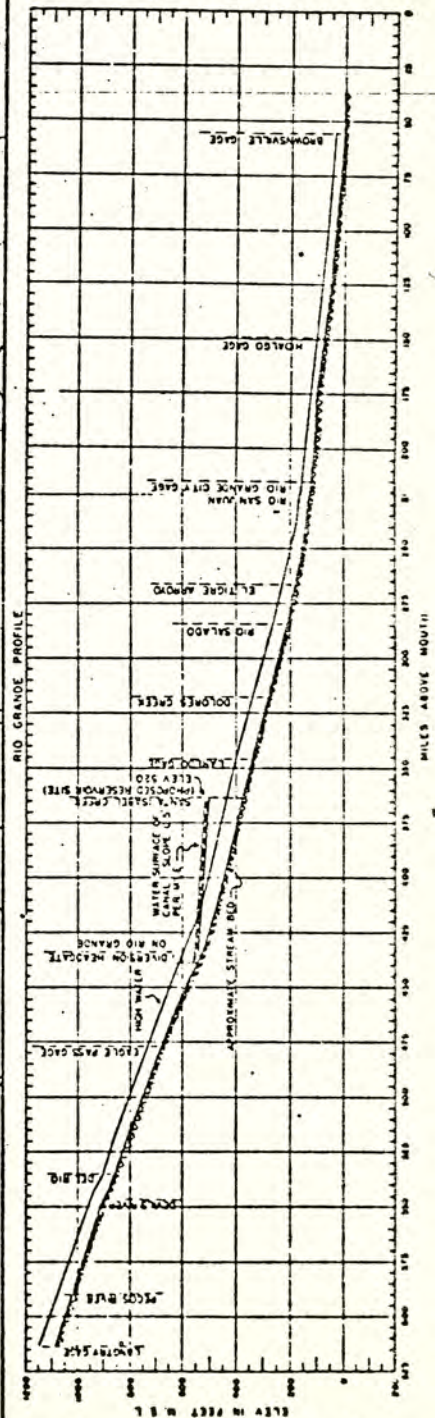
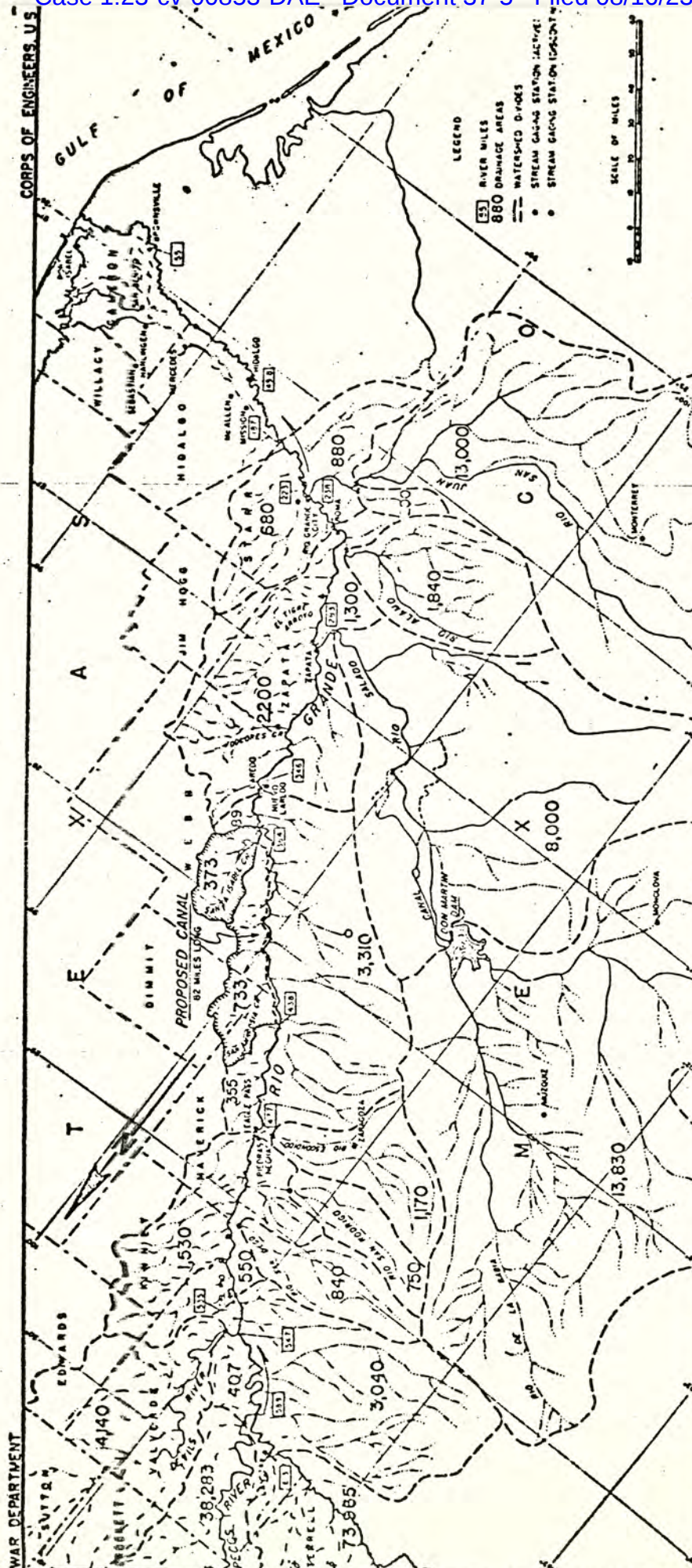
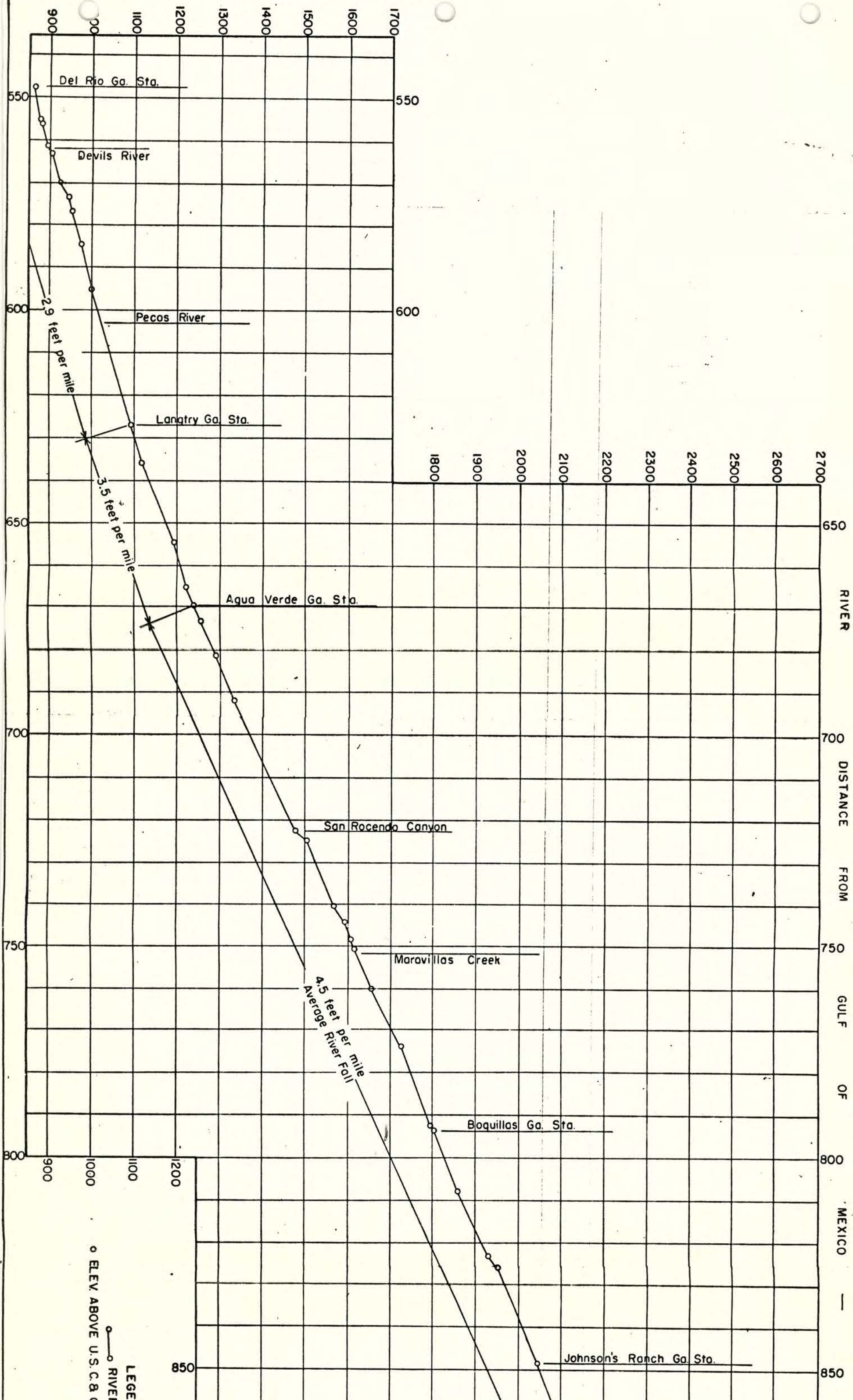


Exhibit 2

SANTA ISABEL CREEK, YEMAS
TRIBUTARY DRAINAGE AREAS
LOWER RIO GRANDE

U.S. ENGINEER OFFICE, GALVESTON, TEXAS JUL 24
 SUBMITTED. RECOMMENDED APPROVED
Edna M. ... *Edna M. ...* *Edna M. ...*
 ASST. ENGR. CHIEF OF E. C. E. C. E. E.
 CHIEF, SURVEYS ON BY ENGR
 TO ACCOMPANY SURVEY REPORT ON FLECO SCN-004
 DATED AUGUST 1, 1939
 DRAWN BY EEP FILE NO 30-1



392 CHIEF OF ENGINEERING, UNITED STATES NAVY, JULY 1941
393 ~~LIST OF PERSONS OVER NAVIGABLE WATERS OF THE U. S.~~ 3

Miles above mouth	Nearest town, street, etc.	Owner	Type of bridge	Channel spans			Channel spans			Channel spans			Date of completion	Operating regulations and closed periods	Purpose for which bridge is used	
				Number of spans	Clear width to channel (in feet)		Clear height of lowest point of superstructure (in feet) above	M. S. L.	M. L. W.	H. W.	Author-ized by	Date				Plans ap-proved by War Dept.
					Left	Center										
1	Richmond Channel, N. J.	Cape May County	F	18				0.88	9.5	4.78	State	1892	Aug. 3, 1917		Highway	
2.5	Thunderbolt, Ga.	Chatham County	Sw	2	27			9.5	12.5	5.0	do	Feb. 21, 1873	Dec. 30, 1923	(1)	do	
2	Dayton, Tenn.	State of Tennessee	F	3	40			691.5	16.5	46.1			1940		do	
2.5	do	do	P	4	23			690.8	13.8	45.4					do	
2.5	do	Rhea County	P	1	41			689.4	14.4	4.4					do	
2	Richmond Ave.	City of New York	B	1	60			14	9		State	May 4, 1897	Oct. 29, 1931	(1)	do	
2.5	Chesler, 4th St.	Delaware County	F	1	140			18.2	21.5	16.1	do	Feb. 14, 1907	May 21, 1931		Railroad	
2.5	Chesler, 5th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 6th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 7th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 8th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 9th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 10th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 11th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 12th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 13th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 14th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 15th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 16th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 17th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 18th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 19th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 20th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 21st St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 22nd St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 23rd St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 24th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 25th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 26th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 27th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 28th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 29th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 30th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 31st St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 32nd St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 33rd St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 34th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 35th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 36th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 37th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 38th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 39th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 40th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 41st St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 42nd St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 43rd St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 44th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 45th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 46th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 47th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 48th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 49th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 50th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 51st St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 52nd St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 53rd St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 54th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 55th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 56th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 57th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 58th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 59th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 60th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 61st St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 62nd St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 63rd St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 64th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 65th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 66th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 67th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 68th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 69th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 70th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 71st St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 72nd St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 73rd St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 74th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 75th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 76th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 77th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 78th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 79th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 80th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 81st St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 82nd St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 83rd St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 84th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 85th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 86th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 87th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 88th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 89th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 90th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 91st St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 92nd St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 93rd St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 94th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 95th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 96th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 97th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 98th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 99th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 100th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 101st St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 102nd St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 103rd St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 104th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do				do	
2.5	Chesler, 105th St.	Pennsylvania R.R.	P	1	75			13.5	17.4	13.2	do					

* Operating regulations approved July 31, 1913.
 * Operating regulations approved Oct. 11, 1919, as amended Jan. 8, 1923.
 * Toll broken.

A proposed amendment approved July 15, 1979

Conducted with Tests vs. River (Chickadee's Pool) until 2015.

A proposed amendment that had been submitted by the Council in February, 1979, was approved at the same time as the above amendment.

Extract from Texas Water Development
Board Report 48, Dec. 1966

76. Falcon Dam and International Falcon Reservoir

Location

Falcon Dam and International Falcon Reservoir are in the Rio Grande Basin in Starr County, 3 miles west of Falcon Heights on the Rio Grande at river mile 270.5, 80 miles downstream from Laredo. The reservoir is in Starr and Zapata Counties, Texas and in Estado de Tamaulipas, Mexico.

Ownership and History of Development

The project is owned by the United States and Mexico, and is operated by the International Boundary and Water Commission.

In 1944 the United States and Mexico signed the most recent of a series of treaties affecting the land and water boundary between the two countries. Among the most important clauses of the Water Treaty of 1944 are those providing for equitable distribution, between the two nations, of the waters of the two principal international streams, the Rio Grande (below Fort Quitman) and the Colorado River, which empties into the Gulf of California. The treaty provides for the construction of necessary works for the maximum conservation and utilization of the waters of the Rio Grande. On the Rio Grande the treaty authorizes the necessary international storage dams to be jointly constructed by the two governments through the International Boundary and Water Commission.

Falcon Dam was authorized by the International Boundary and Water Commission--United States and Mexico. Its development was for conservation, irrigation, power, recreation, and flood control uses. Under the terms of the treaty, the United States will receive 53.6 percent of the conservation storage and Mexico will receive 41.4 percent. The United States' share of the cost was 35 million dollars.

Plans for the dam and two power plants were approved in the fall of 1949, construction began in 1950, and the completion date was April 18, 1954. Deliberate impoundment began August 25, 1953, and the project was dedicated October 19, 1953.

Falcon is one of several projects under the jurisdiction of the International Boundary and Water Commission, and is one of the most important to Texas.

Records of contents from January 1953 through September 30, 1957 are contained in Bulletin 5807-A of the State Board of Water Engineers and from January 1953 in publications of the International Boundary and Water Commission, United States and Mexico.

Physical Description

The dam is a compacted, rolled-earth structure with a controlled spillway on the United States' side of the river with a total length of 26,294 feet and a height of 150 feet with the top of the dam at elevation 323.0 feet above msl. The maximum width of the base is 1,000 feet, and the crown width is 35 feet with a roadway across the top of the entire structure. The embankment contains over 12.6 million cu yd of earthfill. The upstream face is protected by a 3-foot blanket of riprap, and the downstream face is protected by dumped rock.

The reservoir has a summer storage capacity of 2,371,220 acre-feet and a surface area of 78,340 acres at conservation storage level at elevation 296.4 feet above msl, which is the top of the conservation storage space. Above this elevation there is 909,480 acre-feet of flood-control storage capacity. An additional 400,000 acre-feet of conservation storage is allowed during the winter, which reduces the flood-control capacity accordingly. Other capacities are listed at the close of this section.

The drainage area above the dam is 164,482 square miles, of which 87,760 is in the United States and 76,722 is in Mexico.

Of the reservoir capacity, 300,000 acre-feet was allocated for sediment reserve.

The gated spillway is on the United States' side and has a net opening of 300 feet with crest elevation 256.7 feet above msl controlled by six fixed-wheel-type lift gates, 50 feet wide by 50 feet high. The spillway discharge capacity is 456,000 cfs with maximum design flood stage at elevation 314.2 feet above msl. The water enters a chute 1,300 feet long, and is dissipated before entering a control channel leading to the Rio Grande.

There are two 72-inch outlets for water release for each nation, when the turbines are not operating, to supply the downstream requirements. Invert on the United States' side is at elevation 225.0 and on the Mexican side at 205.0 feet above msl.

A power plant with auxiliary equipment is built on each side of the river, and each plant has three 10,500 kw generating units with provision for the fourth unit when justified. The first generation of electricity was October 11, 1954. Power from the United States plant is distributed by Central Power & Light Company.

Pertinent data on Falcon Dam and International Falcon Reservoir are listed below.

Length of dam in Mexico	16,161 feet
Length of dam in United States	10,133 feet
Height of dam above streambed	150 feet
Base width	1,000 feet
Crown width	35 feet
Earth and rockfill	12,600,000 cu yd
Riprap	360,000 cu yd
Concrete	282,000 cu yd
Reinforcing steel	10,300 tons
Total crest length of spillway	
including piers	350 feet
Chute length	1,300 feet
Maximum discharge capacity	456,000 cfs

Capacities and surface areas as of July 1956 sedimentation survey by the International Boundary and Water Commission, used in published records beginning January 1, 1959

Feature	Elevation (feet above msl)	Capacity (acre-feet)	Area (acres)
Top of dam	323.0	--	--
Maximum design flood stage	314.2	4,080,800	115,600
Top of spillway gates	306.7	3,280,700	98,960
Top of conservation storage space (winter)	301.2	<u>2,767,400</u>	87,210
Top of conservation storage space (summer)	296.4	2,371,200	78,340
Bottom of power storage space	248.0	258,900*	15,580
Invert of low outlet	203.33	2,820†	758
Riverbed at axis of dam	<u>175.0</u>	0	0

* Sedimentation storage

† Dead storage

OWNER

AMISTAD RESERVOIR

United States and Mexico. Operated by the International Boundary and Water Commission.

ENGINEER (Design)

United States: U.S. Army Corps of Engineers, Fort Worth District and International Boundary and Water Commission.
Mexico: Ministry of Hydraulic Resources, Mexico, D. F.

LOCATION

On the Rio Grande in Val Verde County, Texas and Estado de Coahuila, Mexico, 12 miles northwest of Del Rio, Texas.

DRAINAGE AREA

The total contributing area above the dam is 126,423 square miles of which 82,690 is in the United States.

DAM

Type	Earthfill and concrete
Length	32,000 ft (9,585 in U.S.)
Maximum height	254 ft
Top width	35 ft.

SPILLWAY

Type	Ogee crest on concrete section
Control	16 tainter gates, each 50 by 54 ft
Crest elevation	1,086.4 ft above msl
Crest length	800 ft (net)

OUTLET WORKS

U.S. : 5 penstocks, each 14.5 ft diameter, with inlet elevation 930.0 ft above msl
Mexico: 4 penstocks, each 15.75 ft diameter, with inlet elevation 965.2 ft above msl
Prior to power installation, water requirements will be released through a bypass in U.S. No. 5 penstock modified for this purpose.

POWER GENERATING FEATURES

Two powerplants are planned with capacity of 80,000 kw each.

AUTHORIZATION

By the International Boundary and Water Commission — United States and Mexico.

RESERVOIR DATA (Based on 1969 data International Boundary and Water Commission)

FEATURE	ELEVATION (FEET ABOVE MSL)	CAPACITY (ACRE-FEET)	AREA (ACRES)
Top of dam	1,152.3	—	—
Maximum design flood stage	1,145.12	5,658,600	89,000
Top flood control storage space	1,140.4	5,249,700	84,400
Top conservation storage space	1,117.0	3,505,400	64,900
Invert lowest outlet (U.S. penstock)	930.0	8,000	700
Net usable conservation storage	—	3,497,400	—

Extract from Senate Document 65,
86th Congress, 1st Session

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PROPOSED DIABLO DAM AND RESERVOIR

8. *Physiography and topography.*—On its course from Fort Quitman to the gulf, the Rio Grande flows successively through three physiographic provinces, namely the Basin and Range, the Great Plains, and the Coastal Plain. The contributing drainage area above the Diablo Dam site lies almost entirely in the rugged mountainous Basin and Range province and the Great Plains province, a region of much lower altitude and comparatively moderate relief.

The Balcones Escarpment, an important factor in the development of flood-producing storms in the drainage basin, lies just outside the eastern boundary of the basin (see exhibit 1) and separates the Coastal Plains from the Great Plains which includes the eastern portion of the watershed. In the main, the Great Plains region is one of gentle rise not exceeding 5 or 6 feet to the mile on the average, and the otherwise rather uniform surface of the region is at times interrupted by low ranges of hills separated by narrow valleys and is occasionally dissected by deep canyonlike arroyos.

The western and largest part of the drainage basin lies within the Basin and Range province, which consists of high plains, deep canyons, and mountains constituting the southern extension of the Rockies. Many peaks in this section exceed 7,000 feet above sea level. The Davis and Guadalupe Mountains in Texas form the principal ranges in the northwestern portion of the drainage basin. The southern portion of the watershed in the Basin and Range province is a high, much dissected plateau extending beyond the Rio Grande far into Mexico.

The topography of the section of the drainage basin in Mexico is even more varied than the part in Texas. Mexico's portion of the basin divides itself naturally into three sections: the Sierra Madre Occidental, the Central Plateau, and the Sierra Madre Oriental regions (see exhibit 1). The Sierra Madre Occidental forms the western boundary of the Rio Conchos Basin. This is a region of rugged topography, much of it above 7,000 feet, with the mountains reaching more than 9,000 feet in the southern portion. This imposing range is a barrier to moisture-bearing winds from the Pacific Ocean. On the southeastern boundary of the basin lies the Sierra Madre Oriental. Less majestic than its western counterpart, it nevertheless has an important influence on the climate of the surrounding area. The forced ascent of the onshore winds from the Gulf of Mexico up the flank of these mountains often produces very heavy rainfalls just outside the basin, and occasionally some spill over into the drainage basin area. Between the two ranges lies the high Central Plateau of Mexico. This is the "tierra templada" or temperate region, temperate in climate because of its elevation, despite its southerly latitude.

9. *River channel.*—For a distance of some 475 miles below Fort Quitman to the easterly boundary of the Basin and Range Province near the San Francisco Creek confluence, the river follows a tortuous course through many very deep canyons separated by narrow intermontane valleys. Continuing downstream in the Great Plains province and to the Diablo Dam site, a distance of 125 miles, the river is entrained throughout in a meandering moderately deep canyon ranging in depth from 600 feet in Martin Canyon near the upper end of this reach to 150 feet at the Diablo site. The gradient of the river is comparatively steep in the upper province, ranging on the average from $4\frac{1}{2}$ feet to $6\frac{1}{2}$ feet per mile. In the lower section the river

above
mile
610
below
mile
610

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gradient gradually flattens and within the Diablo Reservoir site the average river fall is about 2.9 feet per mile.

10. *General geology of the region.*—From Fort Quitman to Del Rio, Tex., the Rio Grande traverses portions of two very distinctive physiographic subprovinces. In the upper 475 miles of this reach, the river passes through a district of extremely diversified relief known as the Mexican Highlands, a subprovince of the Basin and Range Province. Within the Mexican Highlands, the river transects at oblique angles a succession of roughly parallel northwest trending mountain ranges and elongated high plateau segments separated either by troughlike valleys or narrow, almost level basins. In crossing certain of these mountain barriers, the river has incised the remarkably deep picturesque gorges of the Big Bend, among the most spectacular of which are Santa Helena and Mariscal Canyons in the Big Bend National Park, which have maximum depths of 1,900 feet and 1,500 feet, respectively. Upon leaving the easterly boundary of the Mexican Highlands and almost due south of Sanderson, Tex., the river enters the southern sector of the Edwards Plateau, a subprovince of the Great Plains Province. For the next 125 miles on its course to Del Rio, Tex., the Rio Grande traverses, in a continuous generally steep-walled canyon, an area of low relief characterized by almost level-topped uplands, which represent a broad, slightly uplifted, mildly flexured and faulted peneplane.

Although older rocks are sporadically exposed in comparatively small areas in the upper section, formations present along and adjoining the river from Fort Quitman to Del Rio are preponderantly members of the Cretaceous, Tertiary, and Quaternary systems, with rocks of the Cretaceous system being the most extensively exposed. The deep canyons of the Mexican Highlands are walled mostly by massive limestone strata of the Lower Cretaceous, and throughout the downstream province the river is almost continuously entrenched in these limestones as are the Pecos and Devils Rivers for many miles upstream from their confluences with the Rio Grande. Clays, shales, and flaggy limestones of the Upper Cretaceous series, next in order of importance, are most widespread in the basins of the Mexican Highlands and within broad areas bordering the river in the downstream sector. Few exposures of Tertiary rocks are to be found in the Edwards Plateau sector and these occur exclusively south of the border, where, in several small isolated areas, the older Cretaceous sediments are intersected by thin crosscutting and concordant intrusives. Rocks of this period are most prevalent in the Mexican Highlands where tuffaceous sediments, flows, and intrusives occupy expansive areas. Tertiary intrusives in the form of plugs, dikes, and sills, have invaded both the Cretaceous and early Tertiary rocks throughout the Mexican Highlands. The most important of the Quaternary deposits comprise Pleistocene basin filling materials and terrace gravels widely distributed in the intermontane valleys of the Mexican Highlands and isolated remnants of once extensive Pleistocene terrace deposits in the Edwards Plateau sector. Recent alluvial deposits consist primarily of intimately mixed gravels, silts, and clays confined largely to the bottoms and adjacent silt terraces along the river and its main tributaries.

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obtained throughout that period. The estimated annual quantities for each of the three sections below Fort Quitman are listed in table 1, appended.

WATER SUPPLY

29. *Historical river flows.*—Collection of stream-flow records on the Rio Grande below Fort Quitman began in 1900 when 11 stations were established at key points on the river and its tributaries. These were operated until 1914 when, except for a few months in 1919 and 1920, stream gaging on the international portion of the river was suspended until 1923. In that year, gaging resumed with the establishment of 18 stations which have since been operated continuously. Since 1931, when the present joint program of stream gaging by the Commission was adopted, a total of 23 stations have been operated. In order to obtain continuous discharge data since 1900 flows during the 10 missing years, 1914 through 1923, were estimated at the key points from U.S. Weather Bureau gage-height records and other data available during that period.

The 57-year records of historical flows thus obtained at pertinent points, from Fort Quitman to the site of Falcon Dam, are summarized below.

Historical river flows—Rio Grande 1900–1956, inclusive

[Annual quantities in acre-feet]

Location	River mile	Average	Maximum	Minimum
Fort Quitman	(inverted)			
Lower Presidio (below mouth of Rio Conchos)	0	335,300	1,550,200	5,900
Langtry (above Devils and Pecos Rivers)	214	1,380,700	3,525,500	117,700
Diablo Dam site (Dei Rio station) (below Devils and Pecos Rivers)	533	1,874,700	4,279,400	326,100
Site of Falcon Dam	602	2,935,000	6,307,000	727,700
	893	4,058,600	8,407,100	818,700

30. *Source of river flows.*—The sources of historic inflows above the Diablo site are tabulated as follows:

Sources of historical flows passing the Diablo Dam site, 1900–1956—Average annual amounts

Source	Acre-feet	Percent of total
Rio Grande, Fort Quitman	335,300	11.2
Rio Conchos	1,064,000	35.6
Terlingua Creek	54,700	1.8
Alamito Creek		
Pecos River	393,300	13.2
Devils River	1,515,600	17.3
Goodenough Spring	97,700	3.3
Unmeasured sources	524,400	17.6
Total	2,935,000	100.0

¹ Includes an estimated quantity of 100,000 acre-feet annually contributed below the Devils River gaging station 4.5 miles upstream from mouth, as determined by records secured since August 1934 at mouth of river.

Included in the above total flows are relatively small but important contributions from springs located along the Rio Grande upstream from the Diablo site, a distance of about 300 miles, and along the

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Devils and Pecos Rivers. The largest, Goodenough Spring, contributes a minimum annual flow of 60,000 acre-feet to the river, and the combined average annual flow of all springs is estimated to amount to about 400,000 acre-feet. The flows are relatively uniform and provide a minimum base flow at the Diablo site of about 500 cubic feet per second.

The sources of inflows to the river from the Diablo site to Falcon Dam are tabulated as follows:

Sources of historical flows between Diablo Dam site and Falcon Dam—Average annual amounts

Source	Acre-feet	Percent of total
San Felipe and Pinto Creeks. (United States)	63,600	5.9
San Rodrigo, Escondido. (Mexico)	670,500	62.5
San Diego and Salado Rivers and Arroyo las Vacas. (")	339,500	31.6
Unmeasured sources.		
Total	1,073,600	100.0

Downstream from Falcon Dam to the gulf, the principal inflows to the river are from the Mexican tributaries Rio San Juan and Rio Alamo, the waters of which are, by the terms of the 1944 Water Treaty, wholly allotted to Mexico. The remaining inflows are from ordinarily dry arroyos which drain the narrow watershed bordering the river below Falcon Dam comprising 2,440 square miles, and are estimated to amount to an average of 226,000 acre-feet annually.

The river flows, largely derived from the highly variable precipitation, vary erratically over wide ranges from year to year and from month to month. Review of the historic flows at Diablo Dam site shows that 50 percent of the total flow in the 57-year record period occurred in 30 percent of the years. Characteristic of the historical flows is the occurrence of periods of up to 11 consecutive years of subnormal flows, usually separated by 1 or 2 years of much above-normal flows.

31. *Channel and other losses.*—The records show that in the section of the river from the Diablo Dam site to Falcon Reservoir, there are during ordinary flows net gains in the river discharge, excluding measured tributary inflows; but at times of floods large net losses occur in the same section. Net losses were especially significant during the 1954 flood when the records show a loss of about 405,000 acre-feet after taking into account seepage returns to the channel which occurred for several months after the flood. Analysis of the records shows that net losses occur in this section whenever river discharges exceed about 50,000 cubic feet per second and that the total of the net losses averaged about 30,000 acre-feet annually over the 57-year period of record.

In addition, records of losses from Falcon Reservoir since storage began in August 1953, reflect large losses over and above those due to water-surface evaporation, when the total quantity in storage exceeds about 1 million acre-feet. Such additional losses apparently due to seepage and transpiration amounted to an estimated 300,000 acre-feet during the 1954 flood alone. Study of such losses, assuming Falcon Reservoir had been in operation since 1900 without upstream

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storage, indicates that they may be expected to average about 145,000 acre-feet annually.

Since about 93 percent of the flows of the 1954 flood were waters allocated to the United States, of the total of about 705,000 acre-feet of channel and reservoir losses incident to that flood, approximately 650,000 acre-feet of the losses were suffered by the United States. In addition, this country suffered a loss of about 320,000 acre-feet in 1954 by reason of a transfer, under article 8(b) of the 1944 Water Treaty, of that amount of water to Mexico in Falcon Reservoir, since the U.S. inflows in that year were more than sufficient to fill its portion of the total conservation storage in Falcon Reservoir. Thus, in 1954 alone, the United States lost nearly 1 million acre-feet of water sorely needed in the years immediately following.

32. *Quality of waters.*—The records available of chemical analysis of samples of water taken from the Rio Grande below Fort Quitman are summarized in the following table:

Rio Grande stations	Period of record	Total dissolved solids in tons per acre-foot		
		Average	Annual maximum	Annual minimum
Fort Quitman.....	1930-55.....	2.36	5.25	0.51
La Nutria.....	1936-41.....	2.27	2.79	1.96
Upper Presidio.....	1935-56.....	1.92	2.74	.38
Johnson Ranch.....	1948-56.....	.92	1.29	.84
Langtry.....	1945-56.....	.77	.83	.64
Eagle Pass.....	1935-54.....	.95	1.53	.49
Laredo.....	July 1955-56.....	.71		
Roma.....	1944-54.....	.72	.85	.51
Rio Grande City.....	1934-46.....	.83	1.15	.68
Las Palmas.....	1946-48.....	.69	.74	.63
Lower Brownsville.....	1934-36.....	.80	1.03	.69

According to criteria developed by the U.S. Department of Agriculture, Bulletin No. 962, the results of the sampling indicate that except for the flows in the uppermost reach from Fort Quitman to Upper Presidio, the waters of the Rio Grande may be generally classified as "good."

33. *Estimated future river flows.*—In order to develop the quantities of probable future flows of the Rio Grande below Fort Quitman available for regulation and utilization by the two countries, the historical flows for each year were modified by subtracting therefrom the estimated increased depletions which have developed to the present over those which actually obtained in each year beginning in 1900 and were further modified by deducting such additional depletions as are contemplated in the future.

In addition to the historic river and tributary flows, basic data available and used in developing the probable future flows, included information on areas historically irrigated on the U.S. side contained in the water bulletins of the International Boundary and Water Commission, from an irrigated area survey made in 1932, diversion census in 1938, and irrigated and irrigable area surveys made in 1939 and 1940, all by the U.S. Section. On the Mexican side, in addition to the irrigated area data contained in the water bulletins, a detailed field investigation was made in 1940 by the Mexican authorities. From these data, estimates were made by each Section of the Commission of

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areas actually irrigated each year since 1900 in the portions of the basin in its country. To develop the water requirements of the irrigated lands, studies were made by engineers of the two Sections, developing consumptive use coefficients for each portion of the basin using available temperature and precipitation data. In addition, studies were made to develop the effects upon river flows of the reservoirs and regulation works constructed in the basin since 1900, assuming each had been in operation throughout the past 57 years.

Future depletions in the U.S. portion of the basin were assumed to be those required to serve existing developments. In the Mexican portion of the basin, future depletions included certain increases over those for present developments according to the advice of the Mexican Section.

The future flows of the Rio Grande at Fort Quitman were estimated by adjusting the historic flows to indicate the quantities which would have passed that station, if existing works upstream had been in operation since 1900, including: Elephant Butte storage dam (where storage began in 1915), Cabello storage dam (1938), and the irrigation projects downstream therefrom, the American diversion dam and canal (completed in 1938), and the Rio Grande rectification project (1938) and canalization project (1943). The historic flows at Fort Quitman, estimated to average 335,300 acre-feet per year, were thus reduced to an amount averaging about 191,900 acre-feet per year to reflect probable future flows which will consist principally of irrigation drainage and waste waters.

With respect to tributaries in the United States: on the Pecos River, account was taken that its future flows at the mouth will be limited largely to runoff from the watershed below Red Bluff Dam (completed in 1936) plus return flows from the irrigation project downstream therefrom, with only occasional spills at that dam. The resulting modification of historical flows, which averaged 393,000 acre-feet annually, indicate that future flows of the Pecos River at the mouth will probably amount to an average of about 325,800 acre-feet annually. The historical inflows from Alamito, Terlingua, San Felipe, and Pinto Creeks, which together averaged 118,300 acre-feet, were modified on the basis that the acreage irrigated in the future on these creeks may include the total area under existing works, amounting to 7,700 acres. On this basis, future flows from these named creeks are estimated to average 109,100 acre-feet annually. Neither in the Devils River Basin nor near Goodenough Spring is there any irrigation existing or anticipated in the future, and hence the historic flows from these sources which averaged 515,600 and 97,700 acre-feet, respectively, are assumed to obtain in the future.

With respect to tributaries in Mexico: On the Rio Conchos, estimates made by the Mexican section of future inflows assumed that each of the reservoirs—Boquilla (where storage began in 1914), La Colina (1940), Rosetilla (1940), and Madero (1948), were in operation and that the full contemplated irrigation development in the Rio Conchos Basin comprising 286,394 acres was in operation throughout the past 57-year study period. Accordingly, the historical inflows from the Rio Conchos, which averaged 1,064,400 acre-feet per year, were modified such that the average annual future inflows to the Rio Grande are estimated to amount to about 622,500 acre-feet per

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year. The historical flows of the Arroyo las Vacas, Rio San Diego, Rio San Rodrigo, Rio Escondido, and Rio Salado which together averaged 670,800 acre-feet, were similarly modified to take into account existing and contemplated future depletions, such that the probable future total flow of these tributaries is estimated to average 556,200 acre-feet annually.

From the channel of the Rio Grande, Fort Quitman to Falcon Dam, total future depletions on the U.S. side were assumed to be those required for irrigation of lands presently under irrigation works which surveys indicate amount to 19,700 acres in the section above the Diablo Dam site, and 66,000 acres in the section downstream therefrom to Falcon Dam. On the Mexican side, future depletions from the main channel were reported by the Mexican section to be the quantities required for irrigation of about 19,700 acres from Fort Quitman to Diablo Dam site and about 89,500 acres in the section downstream to Falcon Dam. The total quantities of water diverted from the main stream for the contemplated future irrigation of lands on the two banks of the river, estimated from consumptive use studies by the two sections of the Commission and taking into account the availability of flows in the main stream, amount to an average of about 108,000 acre-feet annually in the section from Fort Quitman to Diablo Dam site, and 413,000 acre-feet annually in the section downstream therefrom to Falcon Dam.

The estimated annual total future flows of the Rio Grande at the Diablo Dam site and at the site of Falcon Dam, as developed from the historical flows on the bases described above, are listed for the 57-year period, 1900-1956, in table 2, appended.

Below Falcon Dam, no depletions are anticipated in the runoff from the portion of the watershed bordering the river (excluding the Rio Alamo and Rio San Juan whose waters are allocated to Mexico), so that the historic inflows from this portion of the watershed estimated to average 226,000 acre-feet annually are expected to obtain in the future.

The resulting estimated average annual depletions and future flows at the key points below Fort Quitman are summarized as follows:

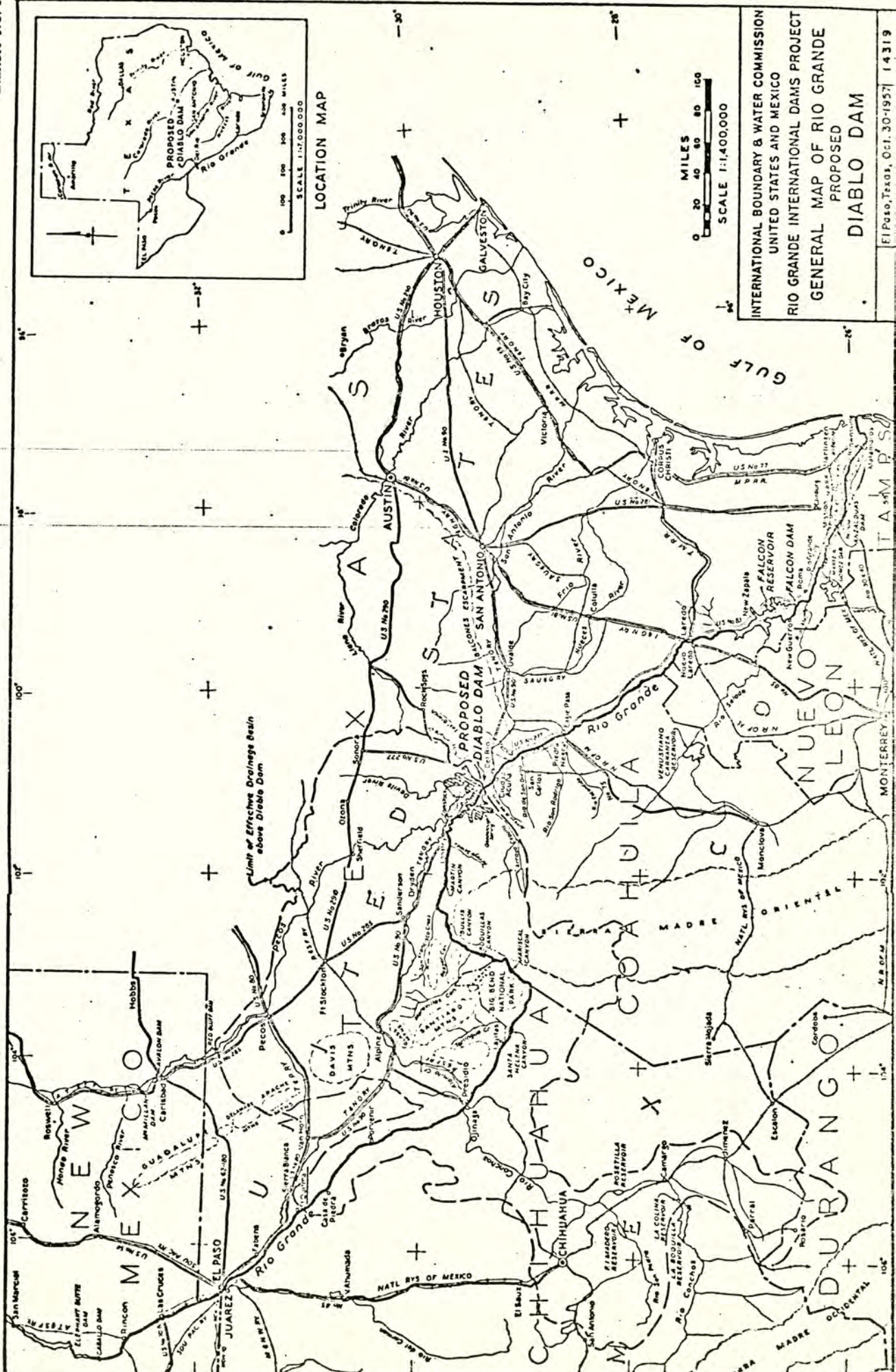
Total flows (United States and Mexico)

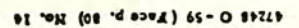
[Average annual quantities in acre-feet]

	Historical flows	Estimated average in- creased de- pletions over historical depletions	Estimated probable future flows
(1) At Diablo Dam site.....	2,985,000	691,000	2,294,000
(2) At site of Falcon Dam.....	4,035,600	1,171,600	2,864,000
(3) Inflows below Falcon Dam (excluding Rio Alamo and Rio San Juan).....	226,000	0	226,000
Total (2)+(3).....	4,261,600	1,171,600	3,090,000

34. *U.S. share of future river flows.*—From the estimated total future inflows to the Rio Grande, there were computed the allocations to this country pursuant to the 1944 water treaty, which comprise: all of the estimated future waters reaching the main channel from the

Exhibit No. 1





Extract From
THE HANDBOOK OF TEXAS, Vol. II
by the Texas Historical
Association, 1952

Rio Grande. The Rio Grande heads at the foot of the Continental Divide north of the San Juan Mountains in southern Colorado and flows generally southward through New Mexico to enter Texas at the northwestern corner of El Paso County. After forming a portion of the boundary between El Paso County, Texas, and Dona Ana County, New Mexico, the river from just west of the city of El Paso to its mouth at the Gulf of Mexico is the international boundary between the United States and Mexico and thus the southern or western boundary of the Texas counties of El Paso, Hudspeth, Presidio, Brewster, Terrell, Val Verde, Kinney, Maverick, Webb, Zapata, Starr, Hidalgo, and Cameron.

In its upper reaches the Rio Grande has the character of a spring-fed, snow-fed mountain stream; in its middle course, that of a desert stream; and in its lower course, that of a typical, irregularly flowing stream in a semiarid climate. Three-fourths of the flow in the lower course is from Mexico. The principal tributaries on the Texas side are the Pecos and Devils rivers. The length of the stream as the Texas boundary is approximately 600 miles and the Texas drainage area is estimated at 40,616 square miles.

The name Rio Grande, meaning Great River, is supposed to have first been applied to the stream in April, 1598, by Juan de Oñate,⁹⁷ who crossed the stream in the vicinity of the present city of El Paso and christened the place Paso del Norte when he went through a ceremony taking possession of the whole American Northwest in the name of the Spanish king. The Rio Grande has been identified as the stream which was called Rio de las Palmas by Alonso Álvarez de Piñeda⁹⁸ in 1519 and by Alvar Núñez, Cabeza de Vaca,⁹⁹ in 1529. It is also supposed to be the river which Fernando del Bosque named Rio San Buenaventura del Norte in 1675 and which Father Damian Massanet⁹⁹ called Ganapetuan in 1691. As the Spaniards became more familiar with the river, its name became more settled. In New Mexico the river was known as the Rio del Norte. In its middle course, it was called Rio Grande; while further towards its mouth, where it flowed through the country inhabited by wild Indians (Indios bravos), it took the name of Rio Bravo, or sometimes, doubtless from the color of its water, that of Rio Turbio.

The French on the basis of René Robert Cavelier, Sieur de la Salle's⁹⁹ accidental landing on the Texas coast made half-hearted attempts to claim that Louisiana extended to the Rio Grande. The claim was still mentioned as late as 1803, the time of the Louisiana Purchase, and was not definitely renounced until the Adams-Onís Treaty⁹⁹ of 1819, but the Rio Grande for more than two centuries

had been claimed by Spain and considerable control had been exercised during much of that time.

On December 19, 1836, during the first session of the Texas Congress, an act locating the boundaries of Texas set forth a claim of the Rio Grande from mouth to source as the southwestern and western boundary of Texas. The claim set aside the documentary testimony of more than a century. The only basis for such a claim was the secret portion of the so-called treaty of Velasco,⁹⁹ which Antonio López de Santa Anna⁹⁹ had repudiated as soon as he was released from Texan captivity and which the Mexican government had never recognized. Stephen F. Austin, writing as secretary of state to William H. Wharton,⁹⁹ who was in the United States attempting to secure annexation for Texas, instructed Wharton to compromise on the southwestern boundary if he felt that would aid Texas in securing admission to the Union. During the entire period of the Republic little settlement was made below the Nueces, and the Rio Grande was never actually under Texan control until authority was established by General Zachary Taylor⁹⁹ at the beginning of the Mexican War. The Rio Grande was finally recognized by Mexico as the Texas boundary in the treaty of Guadalupe Hidalgo.⁹⁹ (For additional information on the Rio Grande as an international boundary, see Rio Grande Boundary.)

The waters of the Rio Grande have been used for irrigation since the latter part of the seventeenth century when Spanish missionaries supervised the Pueblo Indians in the building of canals. Some of the ditches built in 1680 near the village of Ysleta had been in continuous use to as late as the 1940's. Because of the international character of the stream no impounding project was possible until 1945, when a treaty between the United States and Mexico provided for the construction of storage dams by the International Boundary Commission.⁹⁹ Falcon Dam, which was under construction in 1949, is the first of three projected dams. The north abutment of Falcon Dam will be in Starr County, Texas. The reservoir will impound an estimated 3,300,000 acre-feet of water which will be used primarily for irrigation in the Lower Rio Grande Valley of Texas and in the area around Reynosa and Matamoros in the adjoining state of Tamaulipas, Mexico.

See also Rio Grande Compact, Rio Grande Flood Control, Rio Grande Rectification Project, Rio Grande Water Apportionment, and Rio Grande Valley.

EXHIBIT 9

LIST OF KNOWN SURVEY DOCUMENTS
OR REPORTS DESCRIBING THE
RIO GRANDE

United States Geological Survey Water Supply Paper Number 448, Gazetter of Streams of Texas, by the United States Geological Survey, dated 1919

Water Resources by the U. S. Army Corps of Engineers in Texas, by the U. S. Army Corps of Engineer, dated 1973

Texas Water Development Board Report 48, Dams and Reservoirs in Texas, dated 1966, and Report 121, Dams in Reservoirs in Texas, dated 1971

The Texas Water Plan, by the Texas Water Development Board, dated 1968

Water Developments and Potentialities of the State of Texas, by an Interagency Committee, dated 1958

Survey Report on San Felipe Creek, Del Rio, Texas, by the Fort Worth District, U. S. Army Corps of Engineers, dated 1971

Texas Waterways, by the Texas Parks and Wildlife Department, dated 1973

Detailed Project Report for Local Flood Protection, Unnamed Tributary, Eagle Pass, Texas, by the Fort Worth District, U. S. Army Corps of Engineers, dated 1974

Detailed Project Report for Flood Control, Zacate Creek, Laredo, Texas, by the Fort Worth District, U. S. Army Corps of Engineers, dated 1973

Report on Survey of Santa Isabel Creek, Texas, for Flood Control and Allied Purposes, by the U. S. Engineer Office, Galveston, Texas, dated 1939

Various Soil Conservation Service Work Plans.

Various Flood Plain Information Reports.

Various Reports of the International Boundary and Water Commission.

Report of the American Section of the International Water Commission, States and Mexico, House Document 359, 71st Congress, 2d Session, by the American Section of the International Water Commission, dated 1930

Rio Grande International Storage Dams Project: Proposed Amistad Dam Reservoir (Formerly known as Diablo Dam), Senate Document 65, 86th Congress, 1st Session, by the International Boundary and Water Commission, United States Section, dated 1955.

There are other House and Senate Documents applicable to the basin but these are the only ones applicable to this reach.

EXHIBIT 10

LISTING OF BOOKS HAVING INFORMATION ABOUT THE RIO GRANDE

The Handbook of Texas, Volume II, by the Texas State Historical Association, dated 1952

List of Bridges Over the Navigable Waters of the United States, compiled in the office of the Chief of Engineers, United States Army, dated 1941

Supreme Court Reporter, Volume 19, dated 1899

Great River, The Rio Grande in North American History, Volumes I and II, by Paul Horgan, dated 1954

People and Plots on the Rio Grande, by Virgil N. Lott and Virginia M. Fenwick, dated 1957

Rio Grande, by Harvey Fergusson, dated 1933

Along The Rio Grande, by T. H. Lewis, dated 1916

The Romance of Davis Mountains and Big Bend Country, by Carlisle Raht, dated 1919

Rio Grande: Mainline of the Rockies, by Lucius Beebe, dated 1962

The Lower Rio Grande Valley of Texas, by Lee and Lillian Stambaugh, dated 1954

Gringo Builders, by J. L. Allhands, dated 1931

Texas Almanac, by A. H. Belo Corporation, dated 1973

Texas Waterways, by the Texas Parks and Wildlife Department, dated 1973

Various Volumes of the Southwestern Historical Quarterly
The Rio Grande River of Destiny, by Laura Gilpin, dated 1919

Texas Gulf Coast, Volume II, by J. L. Clark and E. M. Scott, dated 1955

Laredo on the Rio Grande, by Kathleen da Corma, dated 1949

A Brief History of the Lower Rio Grande Valley, by Frank C. Pierce, dated 1917

Historical Heritage of the Lower Rio Grande, by Florence Johnson Scott, dated 1937

Texas Rivers and Rapids, by B. M. Noled, dated 1974

Extract from Rio Grande, River
of Destiny by Laura Gilpin
dated 1949

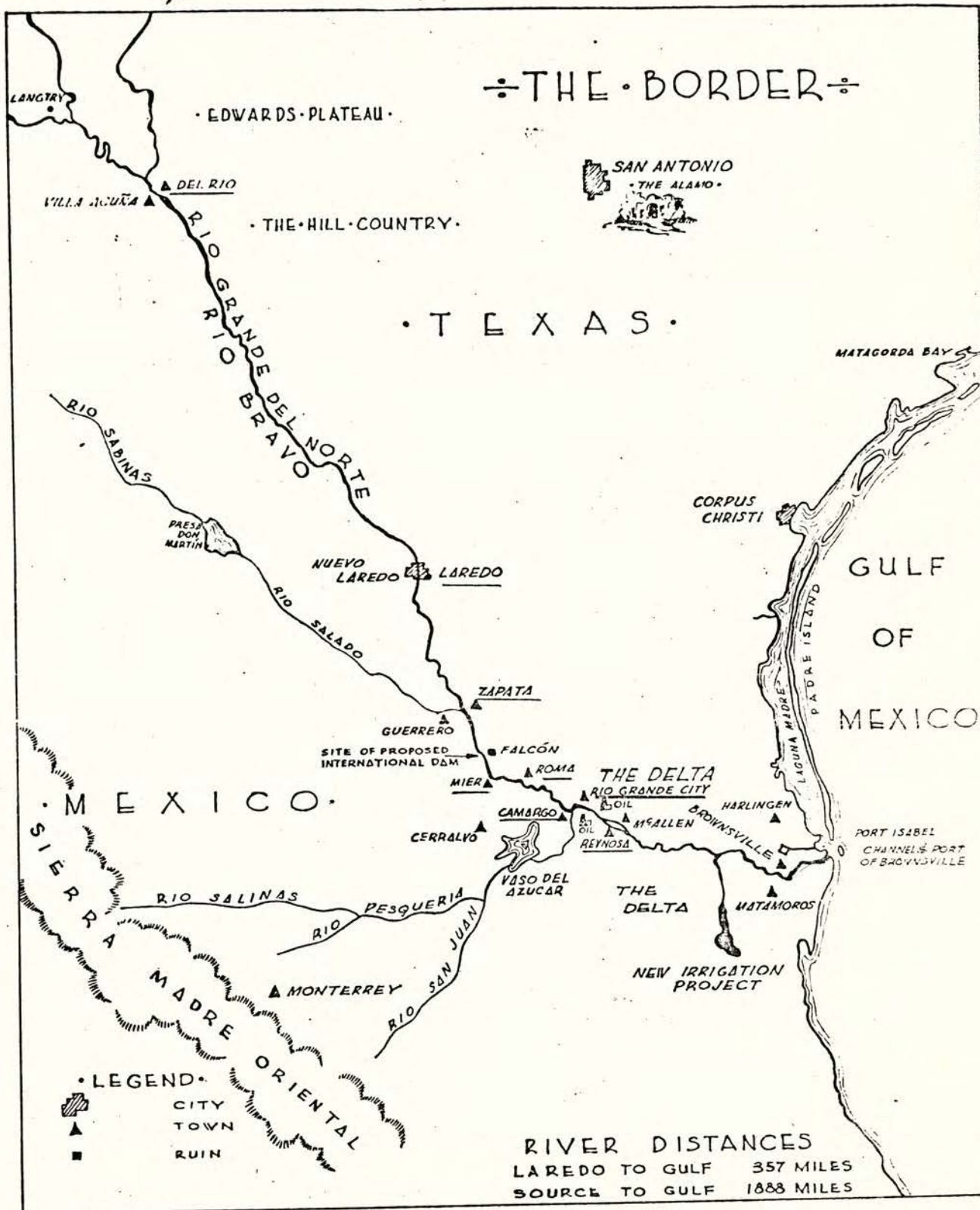
effort to block the approach of Santa Ana, the valiant band of 187 Texans fortified themselves within the Alamo, where for eleven days they stood siege. On the sixth of March, 1836, the famous battle of the Alamo ended when the gallant defenders had fought to the last man against the overwhelming force of Santa Ana's army of three thousand. For forty days General Houston skillfully maneuvered his forces and with a surprise attack he defeated Santa Ana's superior numbers in the Battle of San Jacinto, a battle lasting but eighteen minutes, capturing the Mexican general and a large part of his army.

Texas now stood independent, although it was voted at the first election to seek annexation to the United States. For nearly ten years the Lone Star flag waved over Texas soil, as many difficulties beset the young republic. While a continual procession of new immigrants was arriving from the United States, the Comanche and Cherokee Indians were making constant raids on small settlements, and Mexicans were still troublesome in the south. To deal with these various disturbances the Texas Rangers were organized to protect the citizens of the new republic. In October, 1845, the Congress of the United States voted to admit Texas to the Union and the march of westward colonization moved onward.

Mexico had threatened to regard the annexation of Texas as a declaration of war and the year of 1846 brought the Army of the United States into the Valley of the Rio Grande, where the first battle of the Mexican war was fought. Under the command of General Zachary Taylor, the Mexican forces were defeated in the Battles of Palo Alto and Resaca de la Palma, near the mouth of the river. The fighting moved westward, culminating in the final struggle in California. With the signing of the Treaty of Guadalupe Hidalgo in 1848, peace came once more to the land of the Rio Grande. For thirteen years, constructive enterprises progressed as Brownsville was built and commerce moved across the river to and from Mexico.

But the War Between the States again brought activity of a military nature as the mouth of the Rio Grande became of increasing importance to the Confederacy. With the tightening of the blockade around the South, Brownsville and nearby Port Isabel were the only remaining ports for foreign shipping. In 1861 the Rio Grande was navigable for two hundred miles, and Texas-grown cotton was brought to the mouth of the river by small boats for the transfer to ocean-going vessels in the Gulf of Mexico. Down the coast in small boats and across the land by wagon came cotton to be sold to Europe. Up the coast and back across the land went supplies for the Confederate Army, as these were imported from England, France, and Mexico. The Battle of Palmito Hill, the last battle of the Civil War, was fought on the north bank of the Rio Grande near the mouth of the river on May 12-13, 1865, thirty-four days after the signing of peace, for news traveled slowly in those days.

Frontier life followed as the country was further explored and civil authority established, and the border struggled to settle itself into the paths of peace.



Extract From
THE HANDBOOK OF TEXAS, Vol. II
 by the Texas Historical
 Association, 1952

River Navigation. Because of practically non-existent overland transportation in Texas before the coming of the railroads in 1869-1875, the people of the state made numerous efforts to navigate Texas rivers by steamboat. In 1811, Stephen F. Austin had planned to utilize the *Lively* on the Colorado, but Henry Austin's *Ariel* was the first steamboat on a Texas river. Following a few months' unsuccessful operation on the Rio Grande, the *Ariel* was moved to the Brazos in August, 1830, and in December, 1830, after several attempts to make New Orleans, the *Ariel* was laid up to rot near Harrisburg. In 1834, encouraged by a subscription list formed by a number of planters, Robert Wilson and William P. Harris put the *Ceyogo* in service on the Brazos. The *Yellow Stone* began to ply the Brazos in 1836 and reached San Felipe in February. By 1840 there were at least two small vessels, the *Mustang* and the *Lady Byron*, operating above Brazoria. In 1840 the *Constitution*, a reclaimed ocean steamer, took a load of three hundred bales of cotton over the Velasco bar, which was the principal impediment to navigation on the Brazos.

On the Colorado, six miles above Matagorda, a log raft six miles long impeded navigation. Two companies were chartered to remove the raft, but their attempts as well as those of others, were unsuccessful. By 1838 the *David Crockett* and other keel boats of light draft were operating above the raft, and in the spring of 1845, the *Kate Ward*, constructed especially for Colorado trade was launched at Matagorda. This boat had a keel of 110 feet, a beam of 24 feet, and would carry 600 bales of cotton in three feet of water. A channel was cut through the raft and the *Kate Ward* reached Austin on May 8, 1845.

One of the first attempts to navigate the Trinity River was made by the *Branch T. Archer*, which in May, 1838, ascended the river 350 miles. Although navigation on the Trinity was frequently hindered by low water, by 1840 the *Ellen Frankland* and the *Vesta* were in fairly continuous service, and when the *Ellen Frankland* was wrecked in 1844, the *Scioto Belle* replaced her. The first attempts to navigate the narrow, tortuous Buffalo Bayou were made by the *Laura* (January, 1837), the *Constitution* (June, 1837), the *Leonidas* (August, 1837), and the *Friend* (March, 1838). By 1840 there was a regular service between Houston and Galveston. A raft near Victoria hindered navigation of the Guadalupe, but by 1841 the *Swan* had begun a fairly regular run as far as the raft. Although a canal was cleared around the raft in July, 1841, the Guadalupe apparently never did a significant river trade, and the *Swan* was later purchased by a New Orleans concern which operated a line of steamers on Red River.

A hundred-mile raft above Shreveport, partially cleared by Henry Shreve in 1833, for a long time hindered navigation of Red River. Ben Milam in July, 1831, with the steamboat *Alps*, was the first to navigate successfully the treacherous path through the raft. Because of its length and location, Red River was the most important in Texas river navigation, and, after Shreve cleared the remainder of the raft in 1838, was readily navigable for at least 1,600 miles of its length.

River navigation played an important role in the development of Texas before the Civil War, and by the middle of the nineteenth century there were a number of steamboats on each of the most important rivers, despite water so shallow that not infrequently schedules were interrupted. Down-river and coastwise shipments to Galveston kept a number of steamers in regular service to New Orleans, the first regular run having been scheduled in 1837. River port towns for several decades occupied positions of importance in Texas commerce that they rapidly lost with the coming of the railroads. See also Ocean Shipping.

Bibliography: William R. Hezian, A Social and Economic History of the Texas Republic (Ph.D. thesis, University of Texas, 1942); Herbert Davenport, "Notes on Early Steamboating on the Rio Grande," *Southwestern Historical Quarterly*, XLIX (1945-1946).

Seymour V. Connor

Extract from British Correspondence
Concerning Texas, Edited by
Ephraim Douglass Adams
in the Southwestern Historical Quarterly
Volume 18, July 1914

British Correspondence Concerning Texas

83

BRITISH CORRESPONDENCE CONCERNING TEXAS

XI

EDITED BY EPHRAIM DOUGLASS ADAMS

ELLIOT TO ABERDEEN¹

Private.

Galveston Dec. 2d. 1843.

My Lord,

The late accounts from Mexico induce me to address Your Lordship upon some points which may be of interest if these difficulties should grow into serious heats. Since I have been in this Country I have been endeavouring to procure some trust worthy information respecting the suitableness of the Rio Grande for purposes of Commerce, and therefore if need me, for flotilla operation.

An intelligent English Mariner of the name of Simpton was in the Service of the Texian Government, in command of a small revenue vessel is well acquainted with the Mouth of that river, and I hope in the course of a few weeks to forward Your Lordship a chart of it, rudely drawn indeed, but upon the general correctness of which I should be disposed to place reliance. He is now absent at Corpus Christi, but will bring his papers back with him, and I shall then be able to select what may be useful.

The river itself, so far as I can learn from persons who have crossed it at various points as high up as the Presidio Grande (which Your Lordship will find marked on all the Maps) is ill fitted for general commercial use, or military transport, being very shallow in the dry season, and it is said, having rapids, before that point. All the rivers however, discharging themselves into the Gulf, vary greatly in their navigable facilities, according to the season, and I dare say, that in the winter and spring Months, the Rio Grande would be navigable for a great distance in light iron boats, such as are used in the upper Ganges and Indus. There is a safe anchorage at it's Mouth called the "Brassos del Norte" for vessels not exceeding 10 feet of draught, but on the bar itself, there are not more than 7 feet of water.

¹F. O.; Texas, Vol. 6.

My experience in China, My Lord, taught me that one very serious want of our Military Marine is a sufficiency of vessels of force and resource, either of the Steam arm, or sailing, of a light draught of water. For expeditionary purposes into an enemy's Country, and conjoint operation, when troops must be covered and supplied, this is a very great want, and I would take the liberty to submit that three classes of iron Steam boats would be very necessary for effective Service in Mexico. The largest like the "Nemesis," "Pluto," and "Pligothern" and not to draw more than 6 feet of water at the utmost, with a full supply of coal and other Materiel. A second, with a lighter Armament say a long 18 lb. brass gun, forward and aft not to draw more than 3 feet or 3 feet and a half, and lastly four or six of the class of boats employed on the Upper Indus and Ganges, or even more with a force of ten or fifteen sail of boats of these classes it may be depended upon that there would be no difficulty in penetrating into the heart of Mexico, by the Rio Grande and the rivers to the Southward and Westward of Vera Cruz. It may be added too that after San Juan had fallen there would be no manner of use for any large Ships or Steam boats on this Coast of Mexico, except to serve as Depots for the light force in advance.

Matamoros, Tampico, Alvarado, Tabasco are all accessible to Vessels of the draught I have indicated. Indeed I should mention that at Tabasco there are 11 feet of water on the bar, and that is one point to which I would most particularly draw Your Lordship's attention.

The temper of Yucatan and Tabasco towards the present Government of Mexico is a consideration of much interest. The Tabasco river, or indeed the rivers into which the Main stream branches are navigable for a great distance. The Texian Corvette "Austin" for example drawing upwards of 10 feet of Water went up as high as San Juan de Baptiste (about 80 Miles from the Mouth) and I believe there is said to be a boat communication very nearly the whole way to the City of Mexico by that Stream.

If that point were at once secured, and the people of that Province assured of protection and security at the period of the General Settlement, it is in the highest degree probable, that they would at once declare against the Central Government, and either join themselves to Guatemala or to Yucatan, forming a Republic with easy means of communication between the two Seas, and good

Extracts from People and Plots on the
Rio Grande by V. N. Lott and V. M. Fenwick
 dated 1957

MYTHICAL RINGGOLD

Major George H. Thomas "set up housekeeping in tents outside the compound." That was Lee's first introduction to Ft. Ringgold and it is certain that he did not occupy the so-called "Lee House" on that assignment.

In November, after the trial had worn out half a dozen officers and lawyers, the case was suddenly transferred to Ft. Brown and accordingly, Lee and Thomas boarded the steamer *Ranchero* at Ringgold and floated down river to the Brownsville post. Here they again encountered a housing shortage and were forced to occupy a small room in the officers' quarters with one Lieutenant Howard, all three men sleeping on blankets spread on the floor. Howard's young wife went to live with a sister in Brownsville in the meantime.

As at Ringgold, the court-martial dragged out slowly, but Lee was by this time resigned to his fate and took the monotony philosophically, devoting his time, between wrangles at the court, to visiting Matamoros, across the Rio Grande, and being entertained in homes of several Brownsville families. The name of Lee, even then, was magic to Texans. In Matamoros he saw orange trees on the plaza which had been bearing fruit for many years and on one occasion, so he wrote his family, he was a guest in the home of the Richard Kings, the same Captain King who owned the *Ranchero*, the steamer which had conveyed him to Ft. Brown from Ft. Ringgold. This was also the same Richard King who married the daughter of the first Protestant minister in Brownsville, the Rev. Hiram Chamberlain, founder of the Presbyterian Church in Matamoros, which is still standing. Miss Henrietta Chamberlain and Richard King were married on December 10, 1854. (see *History of the Valley*, by Frank Pierce.)

Lee's visit to the King home was not an event of world-shaking importance but proves one fact: that the first oranges in the Valley were not at Laguna Seca in Hidalgo

MYTHS OF MIER

to the adventurers was filibusters.

One other myth about Mier. Not so very long ago we were doing a bit of research on the Mexican war when we ran across an item that stymied us. The writer, speaking of the return of General Taylor to the States after his victory at Saltillo, said that he left Monterrey on November 8, 1847, and arrived at Mier on the following day; that he was entertained there by the Third Dragoons; and that he left Mier on the 11th on the *Major Brown*, arriving in Camargo the same day and after reviewing the 10th Infantry regiment, left for Matamoros (or Brownsville) on the *Colonel Cross*. The writers, one of them especially, know the Alamo River as well as their own back yards, and know full well that no sternwheeler ever got up that stream from the Rio Grande. It is a physical impossibility and not even a skiff could make the voyage due to the numerous rock ledges in that tributary. We are convinced that the writer of that bit of nonsense must have meant Roma. We believe this for that steamers did make it to Roma is well known and substantiated; they came up to Roma when the Rio was enjoying one of its infrequent rises. At normal stage not even the big Rio Grande was navigable above Rio Grande City, due to a rock ledge at a point about six miles down river at the ranch called Rosita, which extends from one bank to the other and in the years gone, long long gone, formed an island, the channels of which are too narrow for boats at low stages of the river. It is there now and old-timers tell us that it has always been there.

In closing this chapter, we'd like to add that there has long been a mistaken idea in the Valley as to the ownership of the "Old Davis House." One historian recently published a history of the Valley and in covering the Davis story said that the old home was still owned by the Davis heirs. This is a mistake. The old house was jointly owned by the Grand Lodge of Masons of Texas and surviving heirs of the Davis

PEOPLE AND PLOTS ON THE RIO GRANDE

there were battleships at sea, their black hulls looming up menacingly, their guns booming.

Living amid this maneuvering of armies and crashing of cannon balls were hardy pioneers of the Lower Rio Grande Valley. The military post located at Clarksville had been established by General Zachary Taylor before Fort Brown and where military posts were set up pioneers soon came to settle. When Captain Richard King and Captain Mislin Kenedy began their boat operations from the mouth of the Rio Grande to Rio Grande City, and as far up as Roma when the river was high, Clarksville became important because it was the point of unloading sea-going freighters and reloading the merchandise and supplies on the river boats. The little town had from three to four hundred inhabitants in those early days and was a quiet little place. There was a stagecoach to Brownsville, but there were no streets and the little frame buildings were dotted along the sand hills.

Families had horses, sheep, goats and cattle, and there was a general store owned by the Clark family, so prominent in the early history of the Valley.

Lazy, dreamy Bagdad across the Rio Grande didn't come to life until the armies swarmed around; then it literally came alive with a bang! At one time there were 35,000 humans living there.

That fatal year, 1863, brought the end of all peace and quiet, for in that year the first little black Federal gunboat steamed up at sea and the cannon balls began whistling. For two years that sound was the constant warning of danger. With only three hours warning, families had to abandon their homes in Clarksville. They wrapped belongings in sheets and blankets, piled them into little ferries and crossed the Rio Grande just ahead of the landing of the Federal soldiers from the gunboat. The Federal soldiers took charge. They moved into the homes, took over all ware-

CITIES OF FORTUNE

individual desires, the men with a lust for fast living and a quick dollar became bandits. There was no authority to stop them, no officers to whom the defenseless civilians might appeal so the only resource was to force them to stay away by remaining armed. Bandits would come to houses in Clarksville and shoot men on sight without provocation, without explanation. They would get on the river boats and invade towns up and down the Rio Grande. No one from Clarksville to Rio Grande City was safe and Bagdad was even worse. There the riots really broke out.

To stop the trouble which began so often in Bagdad, a group of American officers took four companies of Negro soldiers to Bagdad to settle matters. The American officers were captured though soon released, but the enlisted soldiers got out of control and started looting the town. They ran wild for three days, but were eventually shot by residents of Bagdad, by Americans who went across for that specific purpose, and by each other. With that episode, the boom days of Clarksville and Bagdad, as far as guns and prosperity were concerned, ended.

The final chapter for both towns was to come in 1874. Seven years before this a hurricane struck the Gulf coast. Most of the houses, in fact, some records say all but one home in Clarksville, were washed away. The King and Kenedy Steamship Company rebuilt and repaired its battered boats and went on working on the wharves and warehouses at Clarksville so that business might go on from the mouth of the river to Rio Grande City. The little iron boats chugged down the river, out the mouth and around Brazos Island, where the Morgan Line boats called and where smaller boats carried cargo across the bay to Point Isabel. But those seven years, between 1867 and 1874, brought the end of that business, too.

In 1874 a terrific hurricane struck the coast and washed away every piece of lumber, every stick and stone within

PEOPLE AND PLOTS ON THE RIO GRANDE

Carrizo (now Zapata), Ramireno and most important of all, so far as border history is concerned, Old Dolores.

Dolores is where the first settlement in Texas by Europeans was made south of Ysleta. The established historical fact that Dolores was the first European settlement in Texas below Ysleta, and not Penitas — as commonly thought — comes from no less an authority than Dr. Carlos Castañeda, who certainly needs no introduction to the readers of this history. He is a professor of history at the University of Texas, an authority on early Spanish history in the United States, cited by the Spanish government and the Roman Catholic Church for his contributions to the history of the Spanish government in its discoveries in the western hemisphere, and to the history of the Church in the same area. Dolores was established in 1750 by Don Juan Borrego. (For further information see *The Kingdom of Zapata*, by Virgil N. Lott, published by The Naylor Company).

The road, from its beginning at Brownsville to Rio Grande City, followed the meanderings of the river, and a personal knowledge of those meanderings convinces us that there is no river on earth more sinuous than the Rio Grande. Even today, after it has undergone to some degree a straightening out by the U. S. Army over which it transported supplies before the advent of the railway, to the old army post of Ft. Ringgold from Ft. Brown, the Rio Grande continues to take the path of least resistance and in doing so makes a three-to-one trip: where it could go three miles, it snakes along for nine.

We are not intentionally overlooking the part that river steamboats played in the transportation of supplies for Taylor's army. These played a most important role in the history of the conflict and for many years thereafter river navigation was vital to the life of the area between Ringgold and Brownsville, and to some extent as far up as Laredo.

Notes on Early Steamboating
on the Rio Grande by
Harbart Davenport in the
Southwestern Historical Quarterly
Volume 49, October 1945
Notes on Early Steamboating on the Rio Grand

HARBERT DAVENPORT

The earliest effort at steamboat navigation of the Rio Grande, above Matamoros, was that by Henry Austin in 1829. He brought to the Rio Grande a stout, well built steamboat called the *Ariel*, and operated it between Matamoros and Camargo for several months. Henry Austin had an irascible disposition, and the easy going business methods of the inhabitants did not appeal to him. Austin quarreled with the municipal authorities of the communities he was serving; and there is a story that an ordinance of either Reynosa or Camargo forbade steamboats to tie up within the municipal limits, on the ground that the gases from their smokestacks were deleterious to the inhabitants' health. Since the *Ariel* was of too deep draft for successful navigation of the Rio Grande, Austin gave up after a few months and took the *Ariel* north where she was lost within the year on Galveston Bay.

Mirabeau B. Lamar, whose flair for assembling historical facts was as remarkable as was his inability to use them, notes (evidently from information obtained from Henry Austin):

Captain Henry Austin was the first man to introduce a steamboat into Texas. He had been a year in enterprising projects on Del Norte. He had taken a steamboat there with a view of opening trade with Chihuahua. He expended a large amount of money; effected little [see General Austin's letter to him about the navigation of Del Norte], and then came around to the mouth of the Brazos, and ascended to Brazoria with his boat. This was the first on this river, as it had been the first on the Del Norte.¹

Egerton, English surveyor for the Grant and Beale's Colony, reporting in 1834 implies that there was another attempt at Rio Grande navigation soon after Austin's departure, but of this I have found no other account. Egerton says:

The course of the Rio Grande from the Dolores Ferry [above modern Eagle Pass] to a short distance below the town of Laredo is in various places more or less impeded at low water by rocks . . . at about two leagues below the Presidio del Rio Grande, one of the ledges traverses the river, in an oblique direction, from one bank to the other . . . imme-

¹Lamar Papers, No. 2407, VI, 172. On his reaching Brazoria, see his letter to General Austin, dated August 25, 1830.

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diately below this the river, for about half a league, is turned into a variety of channels by a vast number of islands, from whence this place is called Las Islitas. . . . Having passed the great ledge, deep water is at once found, a channel which leads by a tortuous route through Las Islitas, completely avoiding the numerous minor ledges. . . . A short distance below Loredo is another great ledge, traversing the river in a similar way, from bank to bank. . . . Having reached this far, the Gulf of Mexico may be gained without further impediment or difficulty, beyond a necessary knowledge of the river, as in the Mississippi. . . . Above the Dolores Ferry, I am disposed to believe that the river is perfectly open into Chihuahua and New Mexico. I do not, however, speak from personal observation, as I do respecting the lower river. . . . A few years since a steamboat ascended the river to the lower great ledge, but, the water being rather low, the captain was reluctant to pass it, although there was sufficient depth, fearful lest he be left on the upper side, in case the river fell. The steamboat was of ordinary construction, as was another which had previously ascended above Camargo.²

It is certain that there was no practical or commercial navigation above Matamoros until after the occupation of that city by General Zachary Taylor in May, 1846. General Taylor importuned the quartermaster general for light steamboats; several of these were purchased at Pittsburgh, Pennsylvania, by Major John Saunders, of the quartermaster's department, and transported to the Rio Grande, in June, 1846. Among the earliest arrivals, were the *Corvette*, *Whitesville*, *Major Brown*, and *Colonel Cross*. Mifflin Kenedy, who had assisted Saunders in making his purchases, brought out the *Corvette*. Samuel C. Reid, in *Scouting Expeditions of McCulloch's Rangers*,³ describes the voyage of the steamboat *J. E. Roberts*, much overloaded, which left Matamoros for Camargo, July 13, 1846. This boat grounded the afternoon of July 15, fifteen miles above Reynosa, and was rescued by the steamboat *Brownsville*, voyaging downstream. General Taylor and staff travelled from Matamoros to Camargo, aboard the *Corvette*, at about the same time. Reid also relates that a number of McCulloch's rangers, mustered out of service at Monterrey, September 30, 1846, made their way from Camargo to Matamoros, aboard the steamboat *Whitesville*, which cleared from Camargo, October 10.

At about the same time General Patterson, commanding on the Rio Grande, sent the *Major Brown* above Camargo, on a trial voyage. Concerning this exploration of the river, John

²William Kennedy, *Texas* (Second edition; London, 1841), I, 56-60.

³Samuel C. Reid, *Scouting Expeditions of McCulloch's Rangers* (Philadelphia, 1847), 29ff.

Russell Bartlett, the first United States Boundary Commissioner, said:

In October, 1846, a successful attempt was made to ascend the Rio Grande in the United States steamer Major Brown, by order of General Patterson, with a view to ascertain whether or not it were possible to open a communication between Carmargo and the Presidio del Norte. This vessel drew but two feet of water. She experienced few obstacles in reaching the river Salado, nearly a hundred miles by water above Mier. Above this there was a series of continued shoals, rocks and rapids, among which the boat repeatedly grounded. She at length reached Laredo, a town about six hundred miles by water above the mouth of the river.⁴

Because of a fall in the river while the Major Brown, Mark Sterling, master, was at Laredo, the steamboat was tied up there for several months.⁵

The military need for navigation on the Rio Grande ended July 4, 1848, with the promulgation of the Treaty of Guadalupe Hidalgo, and the river boats then being operated were sold by the quartermaster to Charles Stillman, Matamoros merchant and founder of the new town of Brownsville, as a river port, on the American side. Stillman's steamboating was, to him, disappointing. The boats were not well designed for Rio Grande service, besides having been rather well used up. Stillman thought his Brownsville-Matamoros ferry a more profitable venture; and two of the veteran river boats, the *Whitesville* and the *Frankland*, were abandoned at Brownsville in a way that blocked the only available ferry landing which Stillman did not control. The ships were removed in December, 1849, by the sheriff of Cameron County on order of the commissioners' court.

Mifflin Kenedy, meantime, had quit the steamboating which brought him to the Rio Grande for a commercial venture in the Mexican trade. Stillman's steamboating was, for the most part, conducted by river-boat captains James O'Donnell and Richard King. King, an experienced young steamboatman on shallow Southern rivers, entered the government service on the Rio Grande in 1847 as pilot of the *Corvette*, of which Mifflin Kenedy was master. Later he became master of the *Colonel Cross*. Stillman, anxious to be rid of a losing venture, sought to interest Mifflin Kenedy in his line of steamboats, and Kenedy sought counsel and assistance from O'Donnell and

⁴John Russell Bartlett, *Personal Narrative* (London, 1854), II, 509.

⁵See *Lamar Papers*, Nos. 2235, 2237, 2239, 2252, 2257, 2269, 2279, 2281, VI, 22-40.

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the practical King. King was convinced that Rio Grande navigation could be made profitable only by constructing new types of boats, especially designed for Rio Grande conditions: stout side-wheelers, of five hundred tons burden to handle traffic in the open Gulf, from the ocean port at Brazos de Santiago to deep water above the mouth of the Rio Grande, and light draft stern-wheelers of two hundred tons burden, to operate from Brownsville and Matamoros upstream. The new partnership of "M. Kenedy & Co.," composed of Kenedy, King, O'Donnell, and Stillman, was organized in 1850 to build and operate boats of these new types. O'Donnell sold his interest to Kenedy in 1852. M. Kenedy & Co., as thus reorganized, continued to operate twenty-six boats in all at huge profits until Stillman left the Rio Grande for New York, in 1865. The firm was then reorganized as "King, Kenedy & Co.," and continued in profitable operation until the building of railroads ended the steamboat era, in 1882.

The *Grampus*, first of the five hundred ton Rio Grande side-wheelers, operated between Brazos de Santiago and Brownsville and Matamoros. She was skippered by Richard King. Earliest of the light draft stern-wheelers was the *Comanche*, operated by Mifflin Kenedy. The great commercial success of this undertaking resulted from the wise distribution of partnership responsibility and power. Kenedy had the patience, tact, and understanding to make lasting friends of his sensitive but appreciative customers from the North Mexican states. King, only, of the partners, possessed the driving force essential to handling the ocean-going and lightering problems of the firm. That this partnership was admirably constituted, the vast fortunes built by Stillman, King, and Kenedy are ample proof.*

*The essential facts relating to the development of commercial steamboating on the Rio Grande may be found, somewhat scattered, in Frank C. Pierce's *A Brief History of the Lower Rio Grande Valley* (1917) and in the manuscript, *Memoirs of Colonel John S. Ford*, especially in his chapters entitled "M. Kenedy & Co.," and "King, Kenedy & Co." Such additional details as are here presented were gleaned by the writer from many interesting conversations with the late Captain William Kelly, of Brownsville, who was an officer in the United States quartermaster service, in charge of Rio Grande river boats, in 1865-1866. Kelly, mustered out of service during 1866 at the mouth of the Rio Grande was immediately employed by Mifflin Kenedy for similar duties with King, Kenedy & Company, with whom he continued until that firm dissolved. He then operated on his own account until, at the turn of the last century, steamboating on the Rio Grande came to an end with the disintegration of the *Bessie*, last of the *Comanche* type stern-wheelers to negotiate the sandbars of the erratic border stream.

Extract from Great River
Volume II, 1954

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Book Four: The United States Rio Grande

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El Dorado

Of the war's consequences, some were small, of concern to perhaps only one or two. At noon one day in February, 1848, President Polk had a caller—the ex-Empress Ana María Iturbide who came from Philadelphia with her friend, a Miss White, to interpret for her, to ask about her pension from the Mexican government which owing to the war she was not receiving. In her anxious isolation of language, Doña Ana gathered from Miss White that the President would do what he could. He would ask for a grant from Congress, and did so. There the matter was lost in committee, until thirteen years later the exiled and so briefly imperial matron died in Philadelphia.

Other consequences were national. When the terrific news of the discovery of gold came from California, Mexico knew what she had lost with the war, the Americans what they had gained—the Golden Land, El Dorado, at last—and, as an American magazine put it, “then began the rising and the rush.” It rose in such appetite and fury that Henry David Thoreau was moved to groan, “Going to California . . . it is only three thousand miles nearer Hell. . . . What a comment, what a satire on our institutions! The conclusion will be that mankind will hang itself upon a tree. And who would interfere to cut it down?” In a sense, the rush was never to end for the rest of the nation. With varying objectives in the popular imagination, there would always be something lying in wait to be taken on the golden strand. Once again the Western frontier called, and the United States replied with movement.

Some travellers went by clipper ship from the Eastern ports, sailing to Panama for a jungle passage to the other ocean and a precarious coastwise shipping to the north; or continuing around Cape Horn and up the west coast of the Americas. Some landed at the Arms of Saint James in the Gulf, sailed up the Rio Grande in rusty steamboats left over from the war, and went overland across northern Mexico from

UPSTREAM AND INLAND

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Many volunteer units had enlisted for stated, short terms of service. Now at Camargo when all the energy of the army was needed for the coming campaign in the interior, hundreds of men said good-bye and returned downriver on the steamboats that were headed for the Gulf to bring up more troops and supplies. Of those going home, "the great majority" were "pretty well disgusted with their service," which for them had meant only heat, and illness, and inaction on the outlandish river. But enough were left with the General to make a great display, and on August seventeenth he reviewed them, all drawn up in order of battle. Their line was over three quarters of a mile long—"one of the most magnificent military displays we have had since the last war." With General Taylor four other general officers inspected seven regiments of infantry and two battalions of horse artillery. All were in dress blues, the officers with gold stripes, except the General, who rode the line "in plain undress." He was himself again. He "never looked in better health or spirits," for action was soon to be resumed.

On the following day the first division moved into Mexico, by way of Mier, to be followed by one division a week until all but small holding forces were gone from the Rio Grande. The transport problem over the deserts had been solved—nineteen hundred pack mules with Mexican drivers took the place of most of the horse-drawn wagons. General Scott should have witnessed the difficulties of loading tent poles and canvas and mess chests and sheet-iron kettles and a hundred other articles on the little beasts, which took several hours at the outset of each day's march, so that the first-packed grew tired of standing, and broke and ran, sometimes bucking or rolling till they managed to scatter their burdens. Still, there was no better way to cross the wastes with an army's duffel.

As the movement got under way, the staff at Camargo heard that Mexico was in a state of revolution. President Paredes, who had marched toward the frontier as far as San Luis Potosí with eight thousand troops, was thrown out of office, and a provisional president had sent for the one man who despite his record could unite all Mexicans under his familiar name—Santa Anna. Under a safe-conduct honored by the United States, Santa Anna on his way home from exile in Cuba had landed at Veracruz an August sixteenth, and was proceeding to the capital to take charge. General Taylor now had his principal adversary.

Monterrey lay a hundred and fifty miles southwest of Camargo. The last of the Rio Grande divisions moved out on September first

and honors." Sure of their power, the desert pirates hardly bothered to hide. An Army officer going upstream as a steamboat passenger in 1876 said that his vessel passed right through a herd of stolen cattle "that the Mexicans were driving across the river. Part of the cattle were on one side of the river and part on the other, and the Mexicans were stripped, and had the saddles off their horses, and were in the river driving the cattle across."

When Americans on the border hoped for war against Mexico to force an end to the outrages, they considered how the cure might be worse than the ill; for the Mexican side was far more populous than the Texan side, and, said a Texan witness before Congress, "We are not so foolish but that we know that a war with Mexico, unless premeditated and our Government fully prepared for it, would result in the immediate occupation by Mexicans, for a time at least, of all that country bordering on the river, and would, consequently, involve the loss of the larger part of our stock and the destruction of all our property." Certainly the Army was not "fully prepared" for war on the border in 1876, when out of his Departmental troops General Ord could assign only four hundred to the Rio Grande, of which only three hundred were cavalry. It was all he had to work with, though in the previous year he had asked for a regiment of cavalry "for service on the lower river, and, if practicable, a light-draught iron clad" to be sent to Point Isabel by the Navy "provided with a sufficient number of steam-launches to patrol the river Rio Grande." He was sure that the vessels would be even better than a regiment "to stop the marauding." Cruising launches "could show continually where parties had recently crossed into American territory, or might be crossing, and as the telegraph" was "being laid on the banks, cavalry stationed along the river (an exceedingly crooked one) could get notice to the point and take the trail. . . ." The river's own action made the task of patrolling hard and the pursuit difficult, for in flood or freshet the river chopped away banks, and destroyed roads and trails, and in the lower flats inundated great tracts with mud, so that troops were forced to keep to the high ground. Further, as the river changed its course after storm, it also changed the boundary, so that soldiers were not always certain where they might act on their own ground.

On both sides of the river the "bad man" ruled. If he was a Mexican, he was, at his most impressive, a "general," like Cortina or Canales, both of whom were busy at the congenial task of combining theft with revolutionary gestures, and with fighting each other. If he was an

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and these made his tour more amusing. One was about the system of supplying the river forts by boat. The head of steam navigation in the 1850s (and in fact until the twentieth century when the last steamer ran in 1907) was Roma. Goods were transhipped upriver to the forts by pack and wagon from there. But the report of an early quartermaster of Fort Brown was extraordinary, even though his claims and recommendations came to nothing, as so often happened with Army reports. First of all, until steamboats were released from wartime troop duty, he supplied the river garrisons by keelboat. And then in 1850 he sent an expedition up the river with orders to navigate to the farthest possible place. He hoped to discover that shipping could utilize far more of the river's length than it had so far done. A keelboat and a skiff, manned by sixteen men, ascended the river by channel to a point a thousand miles above the head of steam travel, or about thirteen hundred miles above the mouth. It was an astonishing penetration for a river with so little water, and the expeditioners came back, all safe, to report optimistically that if the channel were improved in certain passages, steam navigation would be entirely feasible all the way "up to Babbitt's Falls." These falls were described as "not perpendicular, but a rapid descent of some 200 feet in about half a mile." They were walled in by a perpendicular gorge hundreds of feet high—so high, with such rocky darkness below the slit of sky overhead, that "the stars could be seen at mid-day." It was a new piece of knowledge of the Rio Grande, and it may have described one of the canyons of the Big Bend. In his enthusiasm the leader of the expedition could see steam navigation having its terminus in the profitless canyon. But even though such pioneer quartermasters argued how practical it would be to fit the river for steam commerce, nothing was done to extend the steamboats' range; for by the international treaties of peace, both Mexico and the United States were bound to consult each other in any engineering works on the boundary river. Such combined action would have to wait for a new century, and then it would turn not to meandering travel by channel, but to irrigation and power projects, such as the international Falcón Dam, which would be dedicated by the American and Mexican presidents in 1953.

In another notion, the Army's quartermaster department hoped to transplant a form of transportation suitable for desert operations, and the Inspector General was in a position to report on its progress. In May, 1856, an American officer arrived at Indianola on the Gulf bringing with him from Smyrna "a drove of Camels of 34 in number,

Extract from East Texas
Riverboat Era and Its Decline
1965

APPENDIX

Navigation on the Central and West Texas Rivers

The earliest efforts at steamboat navigation in Texas was on the fickle Rio Bravo (Rio Grande), by Henry Austin aboard the Ariel. He brought to the Rio Grande a stout, well built little steamboat and operated it between Matamoros and Carmargo for several months. Legend has it that some of the settlements along the river objecting to the billowing black smoke from her smokestacks and requested that she not land nearby. The Ariel then left the Rio Grande and was on the Brazos in 1830.

The Rio Grande, or Rio Bravo, from Dolores Ferry, just above the present town of Eagle Pass, to a short distance below the town of Laredo was more or less impeded at low water by rocks. (In East Texas it was timber "rafts.")

General Zachary Taylor was sent to occupy the American side of the Rio Grande in 1846. He built Fort Brown, opposite Matamoros, and ordered several light draught steamboats from the boatyards in Pittsburgh, Pennsylvania, and had them mounted with cannon. They were the Corvette, the Whitesville, Major Brown and Colonel Cross.

In October 1846, a successful attempt was made to ascend the Rio Grande in the Major Brown from Camargo to Presidio Del Norte. This vessel drew but two feet of water and reached Salado River with little difficulty, but when she reached the region above Mier she grounded repeatedly on the shoals, rocks, and rapids. At length she managed to reach Laredo, a town about six hundred miles by water above the mouth of the river. Because of low water the Major Brown was tied up at Laredo for several months.

With the treaty of Guadalupe Hidalgo, signed February 2, 1848, the need for navigation of the Rio Grande by the Coast Guard ended. By this treaty, among other things, Mexico agreed to the Rio Grande as the Mexico-Texas boundary.

The Whitesville and the Franklin were abandoned at Brownsville in a position that blocked the ferry landing and they were not removed until December 1849, by the local sheriff.

Later, Charles Stillman, a Matamoros merchant, built the river port on the American side of the Rio Grande, and with his partners, Richard King and Miffin Kenedy, made a sizable fortune in the river traffic. Richard King was captain of the Corvette, and later the

side-wheeler Grampus. Kenedy was captain of the stern-wheeler Comanche.

The Rio Bravo has a course estimated from 1500 to 1700 miles in length and was believed to be navigable for 500 miles above Laredo, which is upwards of 200 miles from the coast, by steamboats of light draught for at least seven months of the year.

The Lavaca, Guadalupe, San Antonio, and River de las Nubes (nuts in Spanish) were more or less navigable part of the year.

Historically the Guadalupe is interesting because it was on the banks of this stream that Gonzales, the town which fired the first shots for independence in the Texas Revolution, was founded. Also the Old Spanish Trail follows this river for about forty miles.

Prince Solms-Braunfels, leader of the German colonization in Texas, landed with his immigrant settlers at a place called Carl's Haven on March 14, 1845. Carl's Haven later became known as Indianola and was an important shipping point for cattle, hides, and cotton until the Gulf storm of 1875. At that time the town was completely destroyed.

From Carl's Haven on Lavaca Bay, the German colonist made the 150 miles overland, some in ox-wagons, to New Braunfels. Germans also settled at Fredericksburg on the Pedernales and at Cuero near the coast on the Guadalupe. More than 5,000 came in 1845-46.

The Rio Colorado had rafts of driftwood some ten or twelve miles from the mouth which prevented navigation at that point, but some historians claim the river was navigable by steamboat above the raft to the LaBahia crossing in Fayette County, near LaGrange. Goods brought down the river had to be unloaded and hauled overland past the raft and then reloaded on boats bound for the gulf.

In 1858, the state appropriated money for a canal around the obstruction, but after the Civil War efforts to keep the river open for navigation ceased and the driftwood raft grew until it extended far upriver. By 1900, rice growing, fed by the reservoir of river water held back by the natural dam, had become commercially important in the region.

The cannibal Karanchua Indians lived in their tepee among the sand dunes and formidable cane brakes near the mouth of the Colorado, but they were no great threat to the early colonist because sickness and death had reduced their numbers to a mere handful.

The San Antonio River was navigable at least as far as Goliad, (La Bahia), meaning gigantic, in the early days of river traffic. On December 23, 1833, Dr. Beals, the empresario, wrote in his diary, "The inhabitants (of Goliad) are, almost without exception, gamblers and smugglers, and gain their subsistence by those two occu-

LISTING FROM GALVESTON DISTRICT LISTING OF NAVIGABLE WATERWAYS, dated Sept. 1971

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District: Galveston		Rivers, bayous, creeks, canals, intracoastal waterways.		Harbors, bays, lakes and sounds.		Remarks
State: Texas		Navigable length in Miles		Miles under authorized project.		
Waterway		Length of main channel or sailing course in miles		Miles under authorized project		Remarks
Rhodair Gully		2.2		-		
Rio Grande		275.5		-		Port Acres, Texas Trib of Taylor Bayou
Robinson Bayou		6.7		-		Galveston District Boundary at West Line of Starr County at Falcon Village, Texas
Robinson Lake		-		-		High Island, Texas Trib of East Bay
Rock Creek		5.5		1.5		High Island, Texas Trib of East Bay
Rocky Creek		10.7		-		Livingston, Texas Trib of Trinity River
Rogers Gully		0.6		-		Near Onalaska, Texas Trib of Kickapoo Creek
Rollover Bay		-		-		Near Harmaston, Texas Trib of Lake Houston
Rollover Pass		0.3		1.5		At Gilchrist, Texas Trib of East Bay
				-		Near Caplen, Texas Between Rollover Bay and Gulf of Mexico

Exhibit 18

EXTRACT FROM
TREATIES AND OTHER INTERNATIONAL
AGREEMENTS OF THE UNITED STATES OF AMERICA
1776-1949, Vol. 9

Compiled under the direction of Charles T. Bevans,
Department of State, March 1972

DISTRIBUTION OF WATERS OF RIO GRANDE

Convention signed at Washington May 21, 1906
Senate advice and consent to ratification June 26, 1906
Ratified by the President of the United States December 26, 1906
Ratified by Mexico January 5, 1907
Ratifications exchanged at Washington January 16, 1907
Entered into force January 16, 1907
Proclaimed by the President of the United States January 16, 1907

34 Stat. 2953; Treaty Series 455

The United States of America and the United States of Mexico being desirous to provide for the equitable distribution of the waters of the Rio Grande for irrigation purposes, and to remove all causes of controversy between them in respect thereto, and being moved by considerations of international comity, have resolved to conclude a Convention for these purposes and have named as their Plenipotentiaries:

The President of the United States of America, Elihu Root, Secretary of State of the United States; and

The President of the United States of Mexico, His Excellency Señor Don Joaquín D. Casasús, Ambassador Extraordinary and Plenipotentiary of the United States of Mexico at Washington; who, after having exhibited their respective full powers, which were found to be in good and due form, have agreed upon the following articles:

ARTICLE I

After the completion of the proposed storage dam near Engle, New Mexico, and the distributing system auxiliary thereto, and as soon as water shall be available in said system for the purpose, the United States shall deliver to Mexico a total of 60,000 acre-feet of water annually, in the bed of the Rio Grande at the point where the head works of the Acequia Madre, known as the Old Mexican Canal, now exist above the city of Juarez, Mexico.

ARTICLE II

The delivery of the said amount of water shall be assured by the United States and shall be distributed through the year in the same proportions as the water supply proposed to be furnished from the said irrigation system to lands

DISTRIBUTION OF WATERS—MAY 21, 1906

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in the United States in the vicinity of El Paso, Texas, according to the following schedule, as nearly as may be possible:

	Acre feet per month	Corresponding cubic feet of water
January.....	0	0
February.....	1,090	47,480,400
March.....	5,460	237,837,600
April.....	12,000	522,720,000
May.....	12,000	522,720,000
June.....	12,000	522,720,000
July.....	8,180	356,320,800
August.....	4,370	190,357,200
September.....	3,270	142,441,200
October.....	1,090	47,480,400
November.....	540	23,522,400
December.....	0	0
Total for the year.....	60,000 acre-feet	2,613,600,000 cubic-feet

In case, however, of extraordinary drought or serious accident to the irrigation system in the United States, the amount delivered to the Mexican Canal shall be diminished in the same proportion as the water delivered to lands under said irrigation system in the United States.

ARTICLE III

The said delivery shall be made without cost to Mexico, and the United States agrees to pay the whole cost of storing the said quantity of water to be delivered to Mexico, of conveying the same to the international line, of measuring the said water, and of delivering it in the river bed above the head of the Mexican Canal. It is understood that the United States assumes no obligation beyond the delivering of the water in the bed of the river above the head of the Mexican Canal.

ARTICLE IV

The delivery of water as herein provided is not to be construed as a recognition by the United States of any claim on the part of Mexico to the said waters; and it is agreed that in consideration of such delivery of water, Mexico waives any and all claims to the waters of the Rio Grande for any purpose whatever between the head of the present Mexican Canal and Fort Quitman, Texas, and also declares fully settled and disposed of, and hereby waives, all claims heretofore asserted or existing, or that may hereafter arise, or be asserted, against the United States on account of any damages alleged to have been sustained by the owners of land in Mexico, by reason of the diversion by citizens of the United States of waters of the Rio Grande.

MEXICO

ARTICLE V

The United States, in entering into this treaty, does not thereby concede, expressly or by implication, any legal basis for any claims heretofore asserted or which may be hereafter asserted by reason of any losses incurred by the owners of land in Mexico due or alleged to be due to the diversion of the waters of the Rio Grande within the United States; nor does the United States in any way concede the establishment of any general principle or precedent by the concluding of this treaty. The understanding of both parties is that the arrangement contemplated by this treaty extends only to the portion of the Rio Grande which forms the international boundary, from the head of the Mexican Canal down to Fort Quitman, Texas, and in no other case.

ARTICLE VI

The present Convention shall be ratified by both contracting parties in accordance with their constitutional procedure, and the ratifications shall be exchanged at Washington as soon as possible.

In witness whereof, the respective Plenipotentiaries have signed the Convention both in the English and Spanish languages and have thereunto affixed their seals.

Done in duplicate at the City of Washington, this 21st day of May, one thousand nine hundred and six.

ELIHU ROOT	[SEAL]
JOAQUÍN D. CASASÚS	[SEAL]

Extract from
Treaties and Other International Agreements of the United States of America
 1776-1949, Vol 9
 compiled under the direction of
 Charles T. Bevans, Department of State, March 1972

PEACE, FRIENDSHIP, LIMITS, AND SETTLEMENT (TREATY OF GUADALUPE HIDALGO)

Treaty signed at Guadalupe Hidalgo February 2, 1848

Senate advice and consent to ratification, with amendments, March 10, 1848¹

Ratified by the President of the United States, with amendments, March 16, 1848¹

Ratified by Mexico May 30, 1848

Ratifications exchanged at Querétaro May 30, 1848

Entered into force May 30, 1848

Proclaimed by the President of the United States July 4, 1848

Articles V, VI, and VII amended and article XI abrogated by treaty of December 30, 1853²

Article XXI continued in effect by convention of March 24, 1908³

Articles II-IV, XII-XV, and XVII-XX terminated upon fulfillment of terms

9 Stat. 922; Treaty Series 207⁴

In the name of Almighty God:

The United States of America, and the United Mexican States, animated by a sincere desire to put an end to the calamities of the war which unhappily

¹ For United States amendments to arts. III, IX-XII, and XXIII, see footnotes to those articles. An additional and secret article was stricken out pursuant to the Senate resolution. It reads as follows:

"ADDITIONAL AND SECRET ARTICLE

"Of the Treaty of Peace, Friendship, Limits and Settlement between the United States of America and the Mexican Republic, signed this day by their respective Plenipotentiaries.

"In view of the possibility that the exchange of the ratifications of this treaty may, by the circumstances in which the Mexican Republic is placed, be delayed longer than the term of four months fixed by its twenty-third Article for the exchange of ratifications of the same; it is hereby agreed that such delay shall not, in any manner, affect the force and validity of this Treaty, unless it should exceed the term of eight months, counted from the date of the signature thereof.

"This Article is to have the same force and virtue as if inserted in the treaty to which it is an Addition.

"In faith whereof, we, the respective Plenipotentiaries have signed this Additional and Secret Article, and have hereunto affixed our seals respectively. Done in Quintuplicate at the City of Guadalupe Hidalgo on the second day of February, in the year of Our Lord one thousand eight hundred and forty-eight.

"N. P. TRIST	[SEAL]
LUIS G. CUEVAS	[SEAL]
BERNARDO COUTO	[SEAL]
MIG ¹ ATRISTAIN	[SEAL]"

The text printed here is the amended text as proclaimed by the President.

² TS 208, *post*, p. 812.

³ TS 500, *post*, p. 927.

⁴ For a detailed study of this treaty, see 5 Miller 207.

for facilitating such evacuation, and rendering it convenient to the troops, and for promoting a good understanding between them and the inhabitants.

If, however, the ratification of this treaty by both parties should not take place in time to allow the embarkation of the troops of the United States to be completed before the commencement of the sickly season, at the Mexican ports on the Gulf of Mexico; in such case a friendly arrangement shall be entered into between the General in Chief of the said troops and the Mexican Government, whereby healthy and otherwise suitable places at a distance from the ports not exceeding thirty leagues shall be designated for the residence of such troops as may not yet have embarked, until the return of the healthy season. And the space of time here referred to, as comprehending the sickly season, shall be understood to extend from the first day of May to the first day of November.

All prisoners of war taken on either side, on land or on sea, shall be restored as soon as practicable after the exchange of ratifications of this treaty. It is also agreed that if any Mexicans should now be held as captives by any savage tribe within the limits of the United States, as about to be established by the following Article, the Government of the said United States will exact the release of such captives, and cause them to be restored to their country.

ARTICLE V

The Boundary line between the two Republics shall commence in the Gulf of Mexico, three leagues from land, opposite the mouth of the Rio Grande, otherwise called Rio Bravo del Norte, or opposite the mouth of its deepest branch, if it should have more than one branch emptying directly into the sea; from thence, up the middle of that river, following the deepest channel, where it has more than one to the point where it strikes the Southern boundary of New Mexico; thence, westwardly along the whole Southern Boundary of New Mexico (which runs north of the town called *Paso*) to its western termination; thence, northward, along the western line of New Mexico, until it intersects the first branch of the river Gila; (or if it should not intersect any branch of that river, then, to the point on the said line nearest to such branch, and thence in a direct line to the same;) thence down the middle of the said branch and of the said river, until it empties into the Rio Colorado; thence, across the Rio Colorado, following the division line between Upper and Lower California, to the Pacific Ocean.

The southern and western limits of New Mexico, mentioned in this Article, are those laid down in the Map, entitled "*Map of the United Mexican States, as organized and defined by various acts of the Congress of said Republic, and constructed according to the best authorities. Revised edition. Published at New York in 1847 by J. Disturnell.*" Of which Map a Copy is added to

¹For an amendment to art. V, see treaty of Dec. 30, 1853 (TS 208), *post*, p. 812.

TREATY OF GUADALUPE HIDALGO—FEB. 2, 1848

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this Treaty,⁸ bearing the signatures and seals of the Undersigned Plenipotentiaries. And, in order to preclude all difficulty in tracing upon the ground the limit separating Upper from Lower California, it is agreed that the said limit shall consist of a straight line, drawn from the middle of the Rio Gila, where it unites with the Colorado, to a point on the Coast of the Pacific Ocean, distant one marine league due south of the southernmost point of the Port of San Diego, according to the plan of said port, made in the year 1782, by Don Juan Pantoja, second sailing-Master of the Spanish fleet, and published at Madrid in the year 1802, in the Atlas to the voyage of the schooners *Sutil* and *Mexicana*: of which plan a Copy is hereunto added,⁹ signed and sealed by the respective Plenipotentiaries.

In order to designate the Boundary line with due precision, upon authoritative maps, and to establish upon the ground landmarks which shall show the limits of both Republics, as described in the present Article, the two Governments shall each appoint a Commissioner and a Surveyor, who, before the expiration of one year from the date of the exchange of ratifications of this treaty, shall meet at the Port of San Diego, and proceed to run and mark the said Boundary in it's whole course to the mouth of the Rio Bravo del Norte. They shall keep journals and make out plans of their operations; and the result, agreed upon by them, shall be deemed a part of this treaty, and shall have the same force as if it were inserted therein. The two Governments will amicably agree regarding what may be necessary to these persons, and also as to their respective escorts, should such be necessary.

The Boundary line established by this Article shall be religiously respected by each of the two Republics, and no change shall ever be made therein, except by the express and free consent of both nations, lawfully given by the General Government of each, in conformity with it's own constitution.

ARTICLE VI¹⁰

The vessels and citizens of the United States shall, in all time, have a free and uninterrupted passage by the Gulf of California, and by the river Colorado below it's confluence with the Gila, to and from their possessions situated north of the Boundary line defined in the preceding Article: it being understood that this passage is to be by navigating the Gulf of California and the river Colorado, and not by land, without the express consent of the Mexican Government.

If, by the examinations which may be made, it should be ascertained to be practicable and advantageous to construct a road, canal or railway, which should, in whole or in part, run upon the river Gila, or upon it's right or it's

⁸ For a reproduction of the Disturnell map, see 5 Miller (inside back cover).

⁹ For a reproduction of the plan of the Port of San Diego, see 5 Miller (opposite p. 236).

¹⁰ For amendments to arts. VI and VII, see treaty of Dec. 30, 1853 (TS 208), *post*, p. 814.

left bank, within the space of one marine league from either margin of the river, the Governments of both Republics will form an agreement regarding its construction, in order that it may serve equally for the use and advantage of both countries.

ARTICLE VII

The river Gila, and the part of the Rio Bravo del Norte lying below the southern boundary of New Mexico, being, agreeably to the fifth Article, divided in the middle between the two Republics, the navigation of the Gila and of the Bravo below said boundary shall be free and common to the vessels and citizens of both countries; and neither shall, without the consent of the other, construct any work that may impede or interrupt, in whole or in part, the exercise of this right: not even for the purpose of favoring new methods of navigation. Nor shall any tax or contribution, under any denomination or title, be levied upon vessels or persons navigating the same, or upon merchandise or effects transported thereon, except in the case of landing upon one of their shores. If, for the purpose of making the said rivers navigable, or for maintaining them in such state, it should be necessary or advantageous to establish any tax or contribution, this shall not be done without the consent of both Governments.

The stipulations contained in the present Article shall not impair the territorial rights of either Republic, within its established limits.

ARTICLE VIII

Mexicans now established in territories previously belonging to Mexico, and which remain for the future within the limits of the United States, as defined by the present Treaty, shall be free to continue where they now reside, or to remove at any time to the Mexican Republic, retaining the property which they possess in the said territories, or disposing thereof and removing the proceeds wherever they please; without their being subjected, on this account, to any contribution, tax or charge whatever.

Those who shall prefer to remain in the said territories, may either retain the title and rights of Mexican citizens, or acquire those of citizens of the United States. But, they shall be under the obligation to make their election within one year from the date of the exchange of ratifications of this treaty: and those who shall remain in the said territories, after the expiration of that year, without having declared their intention to retain the character of Mexicans, shall be considered to have elected to become citizens of the United States.

In the said territories, property of every kind, now belonging to Mexicans not established there, shall be inviolably respected. The present owners, the heirs of these, and all Mexicans who may hereafter acquire said property by contract, shall enjoy with respect to it, guaranties equally ample as if the same belonged to citizens of the United States.

Extract from
Treaties and Other International Agreements of the United States of America
1776-1949, Vol 9
compiled under the direction of
Charles T. Bevans, Department of State, March 1972

BOUNDARIES (GADSDEN TREATY)

Treaty signed at México December 30, 1853
*Senate advice and consent to ratification, with amendments, April 25, 1854*¹
Ratified by Mexico May 31, 1854
*Ratified by the President of the United States, with amendments, June 29, 1854*¹
Ratifications exchanged at Washington June 30, 1854
Entered into force June 30, 1854
Proclaimed by the President of the United States June 30, 1854
*Article 8 terminated December 21, 1937, by treaty of April 13, 1937*²
10 Stat. 1031; Treaty Series 208

In the Name of Almighty God

The Republic of Mexico and the United States of America desiring to remove every cause of disagreement, which might interfere in any manner with the better friendship and intercourse between the two Countries; and especially, in respect to the true limits which should be established, when notwithstanding what was covenanted in the Treaty of Guadalupe Hidalgo in the Year 1848,³ opposite interpretations have been urged, which might give occasion to questions of serious moment: to avoid these, and to strengthen and more firmly maintain the peace, which happily prevails between the two Republics, the President of the United States has for this purpose, appointed James Gadsden Envoy Extraordinary and Minister Plenipotentiary of the same near the Mexican Government, and the President of Mexico has appointed as Plenipotentiary "ad hoc" His Excellency Don Manuel Diez de Bonilla Cavalier Grand Cross of the National and Distinguished Order of Guadalupe, and Secretary of State and of the Office of Foreign Relations, and Don Jose Salazar Ylarregui and General Mariano Monterde as Scientific Commissioners invested with Full powers for this Negotia-

¹ As a result of the United States amendments, the terms of the treaty were radically altered: arts. 1 and 2 were rewritten; arts. 3 and 4 were rewritten and combined as art. 3; art. 8 was deleted; and there were several minor corrections of the text. For a detailed study of this treaty, and texts of the articles as signed, see 6 Miller 293.

The text printed here is the amended text as proclaimed by the President.

² TS 932, *post*, p. 1023.

³ Treaty signed Feb. 2, 1848 (TS 207, *ante*, p. 791).

tion who having communicated their respective Full Powers, and finding them in due and proper form, have agreed upon the Articles following.

ARTICLE 1st

The Mexican Republic agrees to designate the following as her true limits with the United States for the future; Retaining the same dividing line between the two California's, as already defined and established according to the 5th Article of the Treaty of Guadalupe Hidalgo, the limits between the Two Republics shall be as follows: Beginning in the Gulf of Mexico, three leagues from land, opposite the mouth of the Rio Grande as provided in the fifth article of the treaty of Guadalupe Hidalgo, thence as defined in the said article, up the middle of that river to the point where the parallel of $31^{\circ}47'$ north latitude crosses the same, thence due west one hundred miles, thence south to the parallel of $31^{\circ}20'$ north latitude, thence along the said parallel of $31^{\circ}20'$ to the 111th meridian of longitude west of Greenwich, thence in a straight line to a point on the Colorado river twenty english miles below the junction of the Gila and Colorado rivers, thence up the middle of the said river Colorado until it intersects the present line between the United States and Mexico.

For the performance of this portion of the Treaty each of the two Governments shall nominate one Commissioner to the end that, by common consent, the two thus nominated having met in the City of Paso del Norte, three months after the exchange of the ratifications of this Treaty may proceed to survey and mark out upon the land the dividing line stipulated by this article, where it shall not have already been surveyed and established by the Mixed Commission according to the Treaty of Guadalupe keeping a Journal and making proper plans of their operations. For this purpose if they should Judge it is necessary, the contracting Parties shall be at liberty each to unite to its respective Commissioner Scientific or other assistants, such as Astronomers and Surveyors whose concurrence shall not be considered necessary for the settlement and ratification of a true line of division between the two Republics; that line shall be alone established upon which the Commissioners may fix, their consent in this particular being considered decisive and an integral part of this Treaty, without necessity of ulterior ratification or approval, and without room for interpretation of any kind by either of the Parties contracting.

The dividing line thus established shall in all time be faithfully respected by the two Governments without any variation therein, unless of the express and free consent of the two, given in conformity to the principles of the Law of Nations, and in accordance with the Constitution of each country respectively.

In consequence, the stipulation in the 5th Article of the Treaty of Guadalupe upon the Boundary line therein described is no longer of any force, wherein it may conflict with that here established, the said line being

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considered annulled and abolished wherever it may not coincide with the present, and in the same manner remaining in full force where in accordance with the same.

ARTICLE 2nd

The government of Mexico hereby releases the United States from all liability on account of the obligations contained in the eleventh article of the treaty of Guadalupe Hidalgo, and the said article and the thirty third article of the treaty of amity, commerce and navigation between the United States of America and the United Mexican States concluded at Mexico, on the fifth day of April, 1831,⁴ are hereby abrogated.

ARTICLE 3rd

In consideration of the foregoing stipulations, the government of the United States agrees to pay to the government of Mexico, in the city of New York, the sum of ten millions of dollars, of which seven millions shall be paid immediately upon the exchange of the ratifications of this treaty, and the remaining three millions as soon as the boundary line shall be surveyed, marked, and established.

ARTICLE 4th

The Provisions of the 6th and 7th Articles of the Treaty of Guadalupe Hidalgo having been rendered nugatory for the most part by the Cession of Territory granted in the First Article of this Treaty, the said Articles are hereby abrogated and annulled and the provisions as herein expressed substituted therefor—The Vessels and Citizens of the United States shall in all Time have free and uninterrupted passage through the Gulf of California to and from their possessions situated North of the Boundary line of the Two Countries. It being understood that this passage is to be by navigating the Gulf of California and the river Colorado, and not by land, without the express consent of the Mexican Government, and precisely the same provisions, stipulations and restrictions in all respects are hereby agreed upon and adopted and shall be scrupulously observed and enforced by the Two Contracting Governments in reference to the Rio Colorado, so far and for such distance as the middle of that River is made their common Boundary Line, by the First Article of this Treaty.

The several Provisions, Stipulations and restrictions contained in the 7th Article of the Treaty of Guadalupe Hidalgo, shall remain in force only so far as regards the Rio Bravo del Norte below the initial of the said Boundary provided in the First Article of this Treaty That is to say below the intersection of the 31°47'30" parallel of Latitude with the Boundary Line established by the late Treaty dividing said river from its mouth upwards according to the 5th Article of the Treaty of Guadalupe.

⁴TS 203, ante, p. 764.

Extract from
Treaties and Other International Agreements of the United States of America
1776-1949, Vol 9
compiled under the direction of
Charles T. Bevans, Department of State, March 1972

BOUNDARY WATERS: RIO GRANDE AND RIO COLORADO

Convention signed at Washington November 12, 1884

Senate advice and consent to ratification June 23, 1886

Ratified by the President of the United States July 10, 1886

Ratified by Mexico August 11, 1886

Ratifications exchanged at Washington September 13, 1886

Entered into force September 13, 1886

Proclaimed by the President of the United States September 14, 1886

24 Stat. 1011; Treaty Series 226

CONVENTION BETWEEN THE UNITED STATES OF AMERICA AND THE UNITED STATES OF MEXICO, TOUCHING THE BOUNDARY-LINE BETWEEN THE TWO COUNTRIES WHERE IT FOLLOWS THE BED OF THE RIO GRANDE AND THE RIO COLORADO

Whereas, in virtue of the 5th article of the Treaty of Guadalupe Hidalgo between the United States of America and the United States of Mexico, concluded February 2, 1848,¹ and of the first article of that of December 30, 1853,² certain parts of the dividing line between the two countries follow the middle of the channel of the Rio Grande and the Rio Colorado, to avoid difficulties which may arise through the changes of channel to which those rivers are subject through the operation of natural forces, the Government of the United States of America and the Government of the United States of Mexico have resolved to conclude a convention which shall lay down rules for the determination of such questions, and have appointed as their Plenipotentiaries

The President of the United States of America, Frederick T. Frelinghuysen, Secretary of State of the United States; and the President of the United States of Mexico, Matias Romero, Envoy Extraordinary and Minister Plenipotentiary of the United Mexican States;

Who, after exhibiting their respective Full Powers, found in good and due form, have agreed upon the following articles:

¹TS 207, ante, p. 791.

²TS 208, ante, p. 812.

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ARTICLE I

The dividing line shall forever be that described in the aforesaid Treaty and follow the centre of the normal channel of the rivers named, notwithstanding any alterations in the banks or in the course of those rivers, provided that such alterations be effected by natural causes through the slow and gradual erosion and deposit of alluvium and not by the abandonment of an existing river bed and the opening of a new one.

ARTICLE II

Any other change, wrought by the force of the current, whether by the cutting of a new bed, or when there is more than one channel by the deepening of another channel than that which marked the boundary at the time of the survey made under the aforesaid Treaty, shall produce no change in the dividing line as fixed by the surveys of the International Boundary Commissions in 1852; but the line then fixed shall continue to follow the middle of the original channel bed, even though this should become wholly dry or be obstructed by deposits.

ARTICLE III

No artificial change in the navigable course of the river, by building jetties, piers, or obstructions which may tend to deflect the current or produce deposits of alluvium, or by dredging to deepen another than the original channel under the Treaty when there is more than one channel, or by cutting waterways to shorten the navigable distance, shall be permitted to affect or alter the dividing line as determined by the aforesaid commissions in 1852 or as determined by Article I. hereof and under the reservation therein contained; but the protection of the banks on either side from erosion by revetments of stone or other material not unduly projecting into the current of the river shall not be deemed an artificial change.

ARTICLE IV

If any international bridge have been or shall be built across either of the rivers named, the point on such bridge exactly over the middle of the main channel as herein determined shall be marked by a suitable monument, which shall denote the dividing line for all the purposes of such bridge, notwithstanding any change in the channel which may thereafter supervene. But any rights other than in the bridge itself and in the ground on which it is built shall in event of any such subsequent change be determined in accordance with the general provisions of this convention.

ARTICLE V

Rights of property in respect of lands which may have become separated through the creation of new channels as defined in Article II. hereof, shall

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not be affected thereby, but such lands shall continue to be under the jurisdiction of the country to which they previously belonged.

In no case, however, shall this retained jurisdictional right affect or control the right of navigation common to the two countries under the stipulations of Article VII. of the aforesaid Treaty of Guadalupe Hidalgo; and such common right shall continue without prejudice throughout the actually navigable main channels of the said rivers, from the mouth of the Rio Grande to the point where the Rio Colorado ceases to be the international boundary, even though any part of the channel of said rivers, through the changes herein provided against, may be comprised within the territory of one of the two nations.

ARTICLE VI

This convention shall be ratified by both parties in accordance with their respective constitutional procedure, and the ratifications exchanged in the city of Washington as soon as possible.

In witness whereof the undersigned Plenipotentiaries have hereunto set their hands and seals.

Done at the city of Washington, in duplicate, in the English and Spanish languages, this twelfth day of November, A.D. 1884.

FREDK. T. FRELINGHUYSEN

[SEAL]

M. ROMERO

[SEAL]

Extract from Report of the American
Section of the International Water
Commission United States and Mexico

House Document 359, 71st Congress,
2d Session

REPORT OF INTERNATIONAL WATER COMMISSION

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Bancalari as its representative on the Colorado and Mr. Gustavo P. Serrano on the Rio Grande. After several days of continuous conferences the report on the Colorado was presented on November 1, and that on the Rio Grande on November 8. These two reports state the attitude of the respective sections of the commission, and they will be found in full in the minutes for those dates appearing hereinafter.

The differences in the views of the two sections rendered it impossible to submit unanimous recommendations from the commission to the two Governments. On the Colorado recommendations were made for a study of the present flood control system—a representative to be appointed by the American and Mexican sections, after which the commission adjourned on November 9, 1929. Since then Mr. Jose L. Favela has been designated by the Mexican section and Mr. Ray M. Priest by the American section. The results of their study will be reported to their respective sections.

CONCLUSIONS

The preceding pages of this report tell of the meetings and conferences of the commission. The appendices which follow give the facts gathered by the investigators. The conclusions of the American section which follow are the result of study of the needs of both countries and of the political and economic views of the people on both sides of the boundary. It will be seen the views once held by the two countries regarding navigation have been modified by changed conditions and that the exigencies of agricultural and urban growth are forcing an unregulated division of such of the waters of the three streams as may be utilized without the much-needed storage of flood waters or essential international understandings. The discussion of the three streams is preceded by a statement of the American section's views on the principles which it believes should control American action on navigation, consumptive and industrial uses of water from the common water supply on the two sides of the boundary.

NAVIGABILITY

The flow of the Tia Juana River is very intermittent in character, being very heavy at times and at other times carrying no perceptible surface flow. Therefore, the Tia Juana has never been considered a navigable stream and the treaties on this subject, between the two countries, do not mention this river.

The treaty of Guadalupe Hidalgo in 1848 and the subsequent treaty for the Gadsden Purchase in 1853 both laid down the theory of navigability of the Rio Grande and the Colorado River and the boundary convention of 1884 confirmed but limited somewhat navigation rights. Navigation was a matter of considerable importance at the time these treaties were concluded as freight movements by boat, however precarious, were vastly more economical and efficient than by ox-cart over undeveloped roads which then formed the only other means of transit. Also at the time these treaties were made most of the entire natural flow of the rivers was discharged into the ocean.

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Navigation has never been extensive, however, on either river. Both carry large quantities of silt which causes the formation of constantly shifting bars, covered only by shallow water, and in their lower reaches their channels are tortuous and ever-changing. Both rivers flow through regions of scanty and uncertain rainfall in which the development of natural resources and the establishment and maintenance of civilized communities, require the diversion from their channels of the waters of the streams for irrigation, domestic and industrial purposes.

COLORADO RIVER

The provisions of these treaties concerning navigation are not, however, the same for the two rivers. With respect to the Colorado River, the treaties laid down no restriction upon the complete sovereignty of the United States over the river or its water within its territorial boundaries, but they do grant, in perpetuity to the vessels and to the citizens of the United States a right of free and uninterrupted navigation through Mexico by way of the Gulf of California and the Colorado River. They show no acknowledgment or grant of any right in Mexico, to any part of that river or its waters except such as are incident to its territorial sovereignty over a portion of its channel; there being no provision for Mexico to navigate the boundary portion of the stream and no obligation on the United States to maintain the navigability of the river.

Mexico has never, as far as the members of this section can ascertain, made any effort to maintain a navigable channel between the Gulf of California and the point where the Colorado River crosses the boundary line between the two countries. Instead of seeking to preserve and improve the navigable character of the Colorado the people of both countries have diverted the waters by head gates, dams and pumps, and are raising a wide variety of valuable crops. They recognize, however, the inevitable destructive effect on navigation as an incident of a more valuable development in other directions. As a result of this development practically the entire low water flow of the river is diverted onto irrigated lands. It also supplies extensive municipal and industrial uses in the seven States of the Colorado River Basin as well as a much more restricted area in Mexico. Within recent years the flow of the river reaching the Gulf of California has been so greatly modified by diversion for consumptive use that navigation in Mexico has become impossible.

As the development of the Colorado River Basin has gone forward railroads and well-established highways have been built thus assisting to render navigation on any portion of the river unnecessary.

RIO GRANDE

With respect to the Rio Grande, the treaties provide that the navigation of the actually navigable main channels of the river is made free and common to the citizens of both countries and neither country may, without the consent of the other, construct any work that may impede or interrupt this navigation.

There has never been any practical navigation on the 1,044 miles of river from El Paso to Roma. From Roma to the Gulf

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navigation has never been extensive and in the past 25 years it has been practically abandoned.

Under a joint resolution of Congress of April 29, 1890, and a protocol of May 6, 1896, the two countries began investigations looking to the equitable division of the waters of this river, so that irrigation from the boundary portion of the river might be expanded in an orderly way. Since that time, except from 1911 to 1924, the two Governments have been seeking a basis for an equitable division of these waters for irrigation and other beneficial uses. The Federal and State authorities of both countries have authorized and acquiesced in large and important diversions of water, from the boundary portion of the river. Almost the entire flow of the river which passed El Paso when the early treaties were made is now diverted for irrigation upon thousands of acres of land extending from the river headwaters in the State of Colorado, down to Fort Quitman, Tex. Since the signing of the old treaties there has grown up, in Mexico and in the United States on the tributaries and along the main river valley below Fort Quitman, irrigation uses upon thousands of acres of fertile land, as well as extensive domestic, municipal, and industrial uses in the many communities that now dot the lower Rio Grande Basin. By treaty in 1906 the two Governments formally agree that along the river from El Paso to Fort Quitman navigation could be entirely eliminated and the water devoted to the more profitable service of irrigation. At the present time, except in years of unusually high flow, the entire discharge of the river, in its lower reaches, is diverted and used during the season of lower-river flow each year.

As these developments have gone forward, well-established highways and railroads have been built, thus rendering navigation on the Rio Grande unnecessary.

It is therefore apparent that the conditions which form the basis of the agreement in the old treaties concerning navigation of the Rio Grande and Colorado Rivers have so completely changed that the spirit is dead, if not the letter, of those parts of the treaties which deal with navigation.

DIVISION OF THE WATERS

The need for irrigation along the international boundary, in the valleys of all three rivers, has led to a large consumptive use of water in both countries. This has extended without any coordinated plans for such development or understanding as to where or how future development is to be carried on. The commission has sought to reach an agreement on principles which would control the division of the water between the two countries. Such an agreement is necessary to protect existing uses, avert dangerous controversies, and provide a safe foundation for future development. In doing this the commission was confronted by the fact that all of the water of the Colorado now being used in Mexico comes from the United States, while about two-thirds of the water of the Rio Grande now being used in Texas below Fort Quitman comes from Mexico. The irregular flow of the Tia Juana and the use of its underground waters prevented a determination of the contributions of each of the two countries to the present uses on each side the boundary.

Extract from
Treaties and Other International Agreements of the United States of America
1776-1949, Vol 9
compiled under the direction of
Charles T. Bevans, Department of State, March 1972

UTILIZATION OF WATERS OF COLORADO AND
TIJUANA RIVERS AND OF THE RIO GRANDE

*Treaty signed at Washington February 3, 1944; protocol signed at
Washington November 14, 1944*

*Senate advice and consent to ratification, with understandings, April 18,
1945¹*

Ratified by Mexico October 16, 1945

*Ratified by the President of the United States, with understandings,
November 1, 1945¹*

Ratifications exchanged at Washington November 8, 1945

Entered into force November 8, 1945

Proclaimed by the President of the United States November 27, 1945

59 Stat. 1219; Treaty Series 994

TREATY

The Government of the United States of America and the Government of the United Mexican States: animated by the sincere spirit of cordiality and friendly cooperation which happily governs the relations between them; taking into account the fact that Articles VI and VII of the Treaty of Peace, Friendship and Limits between the United States of America and the

¹ The United States understandings read as follows:

"(a) That no commitment for works to be built by the United States in whole or in part at its expense, or for expenditures by the United States, other than those specifically provided for in the treaty, shall be made by the Secretary of State of the United States, the Commissioner of the United States Section of the International Boundary and Water Commission, the United States Section of said Commission, or any other officer or employee of the United States, without prior approval of the Congress of the United States. It is understood that the works to be built by the United States, in whole or in part at its expense, and the expenditures by the United States, which are specifically provided for in the treaty, are as follows:

"1. The joint construction of the three storage and flood-control dams on the Rio Grande below Fort Quitman, Texas, mentioned in article 5 of the treaty.

"2. The dams and other joint works required for the diversion of the flow of the Rio Grande mentioned in subparagraph II of article 5 of the treaty, it being understood that the commitment of the United States to make expenditures under this subparagraph is limited to its share of the cost of one dam and works appurtenant thereto.

"3. Stream-gaging stations which may be required under the provisions of section (j) of article 9 of the treaty and of subparagraph (d) of article 12 of the treaty.

United Mexican States signed at Guadalupe Hidalgo on February 2, 1848,² and Article IV of the boundary treaty between the two countries signed at the City of Mexico December 30, 1853³ regulate the use of the waters of the Rio Grande (Rio Bravo) and the Colorado River for purposes of navigation only; considering that the utilization of these waters for other purposes is desirable in the interest of both countries, and desiring, moreover, to fix and delimit the rights of the two countries with respect to the waters of the Colorado and Tijuana Rivers, and of the Rio Grande (Rio Bravo) from Fort Quitman, Texas, United States of America, to the Gulf of Mexico, in order to obtain the most complete and satisfactory utilization thereof, have resolved to conclude a treaty and for this purpose have named as their plenipotentiaries:

The President of the United States of America:

Cordell Hull, Secretary of State of the United States of America, George S. Messersmith, Ambassador Extraordinary and Plenipotentiary of the United States of America in Mexico, and Lawrence M. Lawson, United States Commissioner, International Boundary Commission, United States and Mexico; and.

The President of the United Mexican States:

Francisco Castillo Nájera, Ambassador Extraordinary and Plenipotentiary of the United Mexican States in Washington, and Rafael Fernández MacGregor, Mexican Commissioner, International Boundary Commission, United States and Mexico; who, having communicated to each other their

"4. The Davis Dam and Reservoir mentioned in subparagraph (b), of article 12 of the treaty.

"5. The joint flood-control investigations, preparation of plans, and reports on the Rio Grande below Fort Quitman required by the provisions of article 6 of the treaty.

"6. The joint flood-control investigations, preparations of plans, and reports on the lower Colorado River between the Imperial Dam and the Gulf of California required by article 13 of the treaty.

"7. The joint investigations, preparation of plans, and reports on the establishment of hydroelectric plants at the international dams on the Rio Grande below Fort Quitman provided for by article 7 of the treaty.

"8. The studies, investigations, preparation of plans, recommendations, reports, and other matters dealing with the Tijuana River system provided for by the first paragraph (including the numbered subparagraphs) of article 16 of the treaty.

"(b) Insofar as they affect persons and property in the territorial limits of the United States, the powers and functions of the Secretary of State of the United States, the Commissioner of the United States Section of the International Boundary and Water Commission, the United States Section of said Commission, and any other officer or employee of the United States, shall be subject to the statutory and constitutional controls and processes. Nothing contained in the treaty or protocol shall be construed as impairing the power of the Congress of the United States to define the terms of office of members of the United States Section of the International Boundary and Water Commission or to provide for their appointment by the President by and with the advice and consent of the Senate or otherwise.

Footnotes continued on following page.

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respective Full Powers and having found them in good and due form, have agreed upon the following:

I. PRELIMINARY PROVISIONS

ARTICLE 1

For the purposes of this Treaty it shall be understood that:

- (a) "The United States" means the United States of America.
- (b) "Mexico" means the United Mexican States.

Footnotes continued from previous page.

"(c) That nothing contained in the treaty or protocol shall be construed as authorizing the Secretary of State of the United States, the Commissioner of the United States Section of the International Boundary and Water Commission, or the United States Section of said Commission, directly or indirectly to alter or control the distribution of water to users within the territorial limits of any of the individual States.

"(d) That 'international dam or reservoir' means a dam or reservoir built across the common boundary between the two countries.

"(e) That the words 'international plants', appearing in article 19, mean only hydroelectric generating plants in connection with dams built across the common boundary between the two countries.

"(f) That the words 'electric current', appearing in article 19, mean hydroelectric power generated at an international plant.

"(g) That by the use of the words 'The jurisdiction of the Commission shall extend to the limitrophe parts of the Rio Grande (Rio Bravo) and the Colorado River, to the land boundary between the two countries, and to works located upon their common boundary . . . ' in the first sentence of the fifth paragraph of article 2, is meant: 'The jurisdiction of the Commission shall extend and be limited to the limitrophe parts of the Rio Grande (Rio Bravo) and the Colorado River, to the land boundary between the two countries, and to works located upon their common boundary. . . . '

"(h) The word 'agreements' whenever used in subparagraphs (a), (c), and (d) of article 24 of the treaty shall refer only to agreements entered into pursuant to and subject to the provisions and limitations of treaties in force between the United States of America and the United Mexican States.

"(i) The word 'disputes' in the second paragraph of article 2 shall have reference only to disputes between the Governments of the United States of America and the United Mexican States.

"(j) First, that the one million seven hundred thousand acre-feet specified in subparagraph (b) of article 10 includes and is not in addition to the one million five hundred thousand acre-feet, the delivery of which to Mexico is guaranteed in subparagraph (a) of article 10; second, that the one million five hundred thousand acre-feet specified in three places in said subparagraph (b) is identical with the one million five hundred thousand acre-feet specified in said subparagraph (a); third, that any use by Mexico under said subparagraph (b) of quantities of water arriving at the Mexican points of diversion in excess of said one million five hundred thousand acre-feet shall not give rise to any future claim of right by Mexico in excess of said guaranteed quantity of one million five hundred thousand acre-feet of water.

"(k) The United States recognizes a duty to require that the protective structures to be constructed under article 12, paragraph (a), of this treaty, are so constructed, operated, and maintained as to adequately prevent damage to property and lands within the United States from the construction and operation of the diversion structure referred to in said paragraph."

¹ TS 207, *ante*, p. 791.

² TS 208, *ante*, p. 812.

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(c) "The Commission" means the International Boundary and Water Commission, United States and Mexico, as described in Article 2 of this Treaty.

(d) "To divert" means the deliberate act of taking water from any channel in order to convey it elsewhere for storage, or to utilize it for domestic, agricultural, stockraising or industrial purposes whether this be done by means of dams across the channel, partition weirs, lateral intakes, pumps or any other methods.

(e) "Point of diversion" means the place where the act of diverting the water is effected.

(f) "Conservation capacity of storage reservoirs" means that part of their total capacity devoted to holding and conserving the water for disposal thereof as and when required, that is, capacity additional to that provided for silt retention and flood control.

(g) "Flood discharges and spills" means the voluntary or involuntary discharge of water for flood control as distinguished from releases for other purposes.

(h) "Return flow" means that portion of diverted water that eventually finds its way back to the source from which it was diverted.

(i) "Release" means the deliberate discharge of stored water for conveyance elsewhere or for direct utilization.

(j) "Consumptive use" means the use of water by evaporation, plant transpiration or other manner whereby the water is consumed and does not return to its source of supply. In general it is measured by the amount of water diverted less the part thereof which returns to the stream.

(k) "Lowest major international dam or reservoir" means the major international dam or reservoir situated farthest downstream.

(l) "Highest major international dam or reservoir" means the major international dam or reservoir situated farthest upstream.

ARTICLE 2

The International Boundary Commission established pursuant to the provisions of the Convention between the United States and Mexico signed in Washington March 1, 1889⁴ to facilitate the carrying out of the principles contained in the Treaty of November 12, 1884⁵ and to avoid difficulties occasioned by reason of the changes which take place in the beds of the Rio Grande (Rio Bravo) and the Colorado River shall hereafter be known as the International Boundary and Water Commission, United States and Mexico, which shall continue to function for the entire period during which the present Treaty shall continue in force. Accordingly, the term of the Convention of March 1, 1889 shall be considered to be indefinitely extended, and

⁴ TS 232, *ante*, p. 877.

⁵ TS 226, *ante*, p. 865.

the Convention of November 21, 1900⁶ between the United States and Mexico regarding that Convention shall be considered completely terminated.

The application of the present Treaty, the regulation and exercise of the rights and obligations which the two Governments assume thereunder, and the settlement of all disputes⁷ to which its observance and execution may give rise are hereby entrusted to the International Boundary and Water Commission, which shall function in conformity with the powers and limitations set forth in this Treaty.

The Commission shall in all respects have the status of an international body, and shall consist of a United States Section and a Mexican Section. The head of each Section shall be an Engineer Commissioner. Wherever there are provisions in this Treaty for joint action or joint agreement by the two Governments, or for the furnishing of reports, studies or plans to the two Governments, or similar provisions, it shall be understood that the particular matter in question shall be handled by or through the Department of State of the United States and the Ministry of Foreign Relations of Mexico.

The Commission or either of its two Sections may employ such assistants and engineering and legal advisers as it may deem necessary. Each Government shall accord diplomatic status to the Commissioner, designated by the other Government. The Commissioner, two principal engineers, a legal adviser, and a secretary, designated by each Government as members of its Section of the Commission, shall be entitled in the territory of the other country to the privileges and immunities appertaining to diplomatic officers. The Commission and its personnel may freely carry out their observations, studies and field work in the territory of either country.

The jurisdiction of the Commission shall extend to the limitrophe parts of the Rio Grande (Rio Bravo) and the Colorado River, to the land boundary between the two countries, and to works located upon their common boundary,⁸ each Section of the Commission retaining jurisdiction over that part of the works located within the limits of its own country. Neither Section shall assume jurisdiction or control over works located within the limits of the country of the other without the express consent of the Government of the latter. The works constructed, acquired or used in fulfillment of the provisions of this Treaty and located wholly within the territorial limits of either country, although these works may be international in character, shall remain, except as herein otherwise specifically provided, under the exclusive jurisdiction and control of the Section of the Commission in whose country the works may be situated.

The duties and powers vested in the Commission by this Treaty shall be in addition to those vested in the International Boundary Commission by

⁶ TS 244, *ante*, p. 910.

⁷ For an understanding relating to the word "disputes," see footnote 1, p. 1168.

⁸ For an understanding relating to the meaning of these words, see footnote 1, p. 1168.

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the Convention of March 1, 1889 and other pertinent treaties and agreements in force between the two countries except as the provisions of any of them may be modified by the present Treaty.

Each Government shall bear the expenses incurred in the maintenance of its Section of the Commission. The joint expenses, which may be incurred as agreed upon by the Commission, shall be borne equally by the two Governments.

ARTICLE 3

In matters in which the Commission may be called upon to make provision for the joint use of international waters, the following order of preferences shall serve as a guide:

1. Domestic and municipal uses.
2. Agriculture and stockraising.
3. Electric power.
4. Other industrial uses.
5. Navigation.
6. Fishing and hunting.
7. Any other beneficial uses which may be determined by the Commission.

All of the foregoing uses shall be subject to any sanitary measures or works which may be mutually agreed upon by the two Governments, which hereby agree to give preferential attention to the solution of all border sanitation problems.

II. RIO GRANDE (RIO-BRAVO)

ARTICLE 4

The waters of the Rio Grande (Rio Bravo) between Fort Quitman, Texas and the Gulf of Mexico are hereby allotted to the two countries in the following manner:

A. To Mexico:

- (a) All of the waters reaching the main channel of the Rio Grande (Rio Bravo) from the San Juan and Alamo Rivers, including the return flow from the lands irrigated from the latter two rivers.
- (b) One-half of the flow in the main channel of the Rio Grande (Rio Bravo) below the lowest major international storage dam, so far as said flow is not specifically allotted under this Treaty to either of the two countries.
- (c) Two-thirds of the flow reaching the main channel of the Rio Grande (Rio Bravo) from the Conchos, San Diego, San Rodrigo, Escondido and Salado Rivers and the Las Vacas Arroyo, subject to the provisions of subparagraph (c) of paragraph B of this Article.

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(d) One-half of all other flows not otherwise allotted by this Article occurring in the main channel of the Rio Grande (Rio Bravo), including the contributions from all the unmeasured tributaries, which are those not named in this Article, between Fort Quitman and the lowest major international storage dam.

B. To the United States:

(a) All of the waters reaching the main channel of the Rio Grande (Rio Bravo) from the Pecos and Devils Rivers, Goodenough Spring, and Alamito, Terlingua, San Felipe and Pinto Creeks.

(b) One-half of the flow in the main channel of the Rio Grande (Rio Bravo) below the lowest major international storage dam, so far as said flow is not specifically allotted under this Treaty to either of the two countries.

(c) One-third of the flow reaching the main channel of the Rio Grande (Rio Bravo) from the Conchos, San Diego, San Rodrigo, Escondido and Salado Rivers and the Las Vacas Arroyo, provided that this third shall not be less, as an average amount in cycles of five consecutive years, than 350,000 acre-feet (431,721,000 cubic meters) annually. The United States shall not acquire any right by the use of the waters of the tributaries named in this subparagraph, in excess of the said 350,000 acre-feet (431,721,000 cubic meters) annually, except the right to use one-third of the flow reaching the Rio Grande (Rio Bravo) from said tributaries, although such one-third may be in excess of that amount.

(d) One-half of all other flows not otherwise allotted by this Article occurring in the main channel of the Rio Grande (Rio Bravo), including the contributions from all the unmeasured tributaries, which are those not named in this Article, between Fort Quitman and the lowest major international storage dam.

In the event of extraordinary drought or serious accident to the hydraulic systems on the measured Mexican tributaries, making it difficult for Mexico to make available the run-off of 350,000 acre-feet (431,721,000 cubic meters) annually, allotted in subparagraph (c) of paragraph B of this Article to the United States as the minimum contribution from the aforesaid Mexican tributaries, any deficiencies existing at the end of the aforesaid five-year cycle shall be made up in the following five-year cycle with water from the said measured tributaries.

Whenever the conservation capacities assigned to the United States in at least two of the major international reservoirs, including the highest major reservoir, are filled with waters belonging to the United States, a cycle of five years shall be considered as terminated and all debits fully paid, whereupon a new five-year cycle shall commence.

Extract From
THE HANDBOOK OF TEXAS, Vol II
by the Texas Historical
Association, 1952

Rio Grande Water Apportionment. Apportionment of water of the Rio Grande between the United States and Mexico is determined by treaties made in 1906 and 1944. By the treaty of 1906 the United States promised to deliver 60,000 acre-feet of water annually for irrigation in the Juárez valley, peak period of delivery falling in April, May, and June. In return Mexico waived all claims for any purpose to the waters of the river between the head of the Mexican Canal and Fort Quitman, Texas.

The 1944 treaty dealt with the Rio Grande between Fort Quitman and the Gulf of Mexico. The following order of preference in joint use of the international waters was set up: (1) domestic and municipal uses, (2) agriculture and stock raising, (3) electric power, (4) other industrial uses, (5) navigation, (6) fishing and hunting, and (7) any other beneficial use to be determined by the International Boundary Commission.⁴⁷

Under Article IV Mexico received all of the waters of the San Juan and Alamo rivers, one-half of the flow in the main channel of the Rio Grande below the lowest major international storage dam; two-thirds of the flow in the main channel from the Conchos, San Diego, San Rodrigo, Escondido, and Salado rivers and Las Vacas Arroyo, provided that the United States receive from these same six streams not less than 350,000 acre-feet annually as an average in five-year cycles, and one-half of all other flows not otherwise allotted occurring in the main channel of the Rio Grande.

Also under Article IV the United States was given all of the waters of the Pecos and Devils rivers, Goodenough Spring, and Alamito, Terlingua, San Felipe, and Pinto creeks; one-half of the flow

in the main channel of the Rio Grande below the lowest major international storage; one-third of the flow reaching the main channel of the Rio Grande from the Conchos, San Diego, San Rodrigo, Escondido, and Salado rivers and Las Vacas Arroyo, provided that this be not less than 350,000 acre-feet annually as an average in five-year cycles; and one-half of all other flows not otherwise allotted occurring in the main channel of the Rio Grande.

The quantity of water allotted to the United States not only took care of existing needs but also permitted expansion of irrigated areas.

BIBLIOGRAPHY: Wallace Hawkins, "Water Rights in United States-Mexico Streams," *Temple Law Quarterly*, V (January, 1931); J. Simsarian, "The Diversion of Waters Affecting the United States and Mexico," *Texas Law Review*, XVII (December, 1938); Charles Timm, "Some International Problems Arising from Water Diversion on the United States-Mexican Boundary," *Southwestern Social Science Quarterly*, XV (March, 1935).

IN GALVESTON, TEXAS, DISTRICT

Opinions by Office Chief of Engineers, (See correspondence file 2401/2395)

WATERWAY.	HEAD OF NAVIGATION		DATE OF	REMARKS
	MILES:	DEFINITE POINT	OPINION	
	ABOVE:	CONSIDERED AS HEAD	OF	
	MOUTH:	OF NAVIGATION	C. OF E.	
Alligator Bayou, Tex.		Non-Navigable	18 Apr. 1937	
Alligator Bayou, New drainage canal	0.3	Navigable to salt water gate near T. & N. O. R.R. bridge	3 Apr. 1946	Permit issued to Jefferson Co. Drainage Dist. No. 7, Permit No. 109
Bastrop Bayou, Texas	20		25 Mar. 1932	
Brays Payou, Texas	3	Telephone Cut-Off Road Bridge	2 May 1932	
Brazos River, Texas		Old Washington Franklin Avenue	26 Jul. 1934	Date of letter from Division Office
Buffalo Bayou, Texas	*23	Bridge	25 Mar. 1932	7 Miles above turning basin
Caney Creek, Texas	30	Immediately downstream from bridge near Hawkinsville	2 May 1932	3.
Cedar Bayou, Texas	16	Needle Point	25 Mar. 1932	
		6 Miles above M. P. R.R. Bridge at		
Chocolate Bayou, Texas	16½	Liverpool	2 May 1932	
Clear Creek, Texas	20	Friendswood	26 Jul. 1934	Date of letter from Division Office
Colorado River, Texas	21		25 Mar. 1932	
Corpus Christi Pass, Tex.		Navigable		
Devils River, Texas	*	Non-Navigable	31 Mar. 1932	*
Dickinson Bayou, Texas	20		26 Jul. 1934	Date of letter from Division Office
Double Bayou, Texas (East Branch)	12		25 Mar. 1932	
(West Branch)	8		25 Mar. 1932	
Drainage Canal between Taylors Bayou and Gulf Intracoastal Waterway		Navigable	3 Apr. 1946	Permit issued to Jefferson Co. Drainage Dist. No. 7, Permit No. 109
Gundalupo River, Texas		Non-Navigable 2½ miles below Chero	23 Jan. 1937	Letter to Department of Agriculture
Gum Bayou, Texas		Non-Navigable	April 1937	EXHIBIT 26

NAVIGABLE STATUS OF CERTAIN WATERWAYS IN GALVESTON, TEXAS, DISTRICT

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Opinions by Office Chief of Engineers, (See correspondence file 2401/2395)

WATERWAY	HEAD OF NAVIGATION		DATE OF		REMARKS
	MILES:	DEFINITE POINT	OPINION		
	ABOVE:	CONSIDERED AS HEAD	OF		
	MOUTH:	OF NAVIGATION	C. OF E.		
Hillobrandt Bayou, Tex.		Navigable to State Hwy No. 124, bridge at South City limits of Beaumont	15 Apr. 1948		Letter to Division Engineer from OCE, 3rd Ind Permit No. 606
Hunting Bayou, Texas	1.2	Dam at mile 1.21	19 Oct. 1948		OCE, 2nd Ind Permit No. 150
Johnson Bayou, La.	4.5	Lower landing at mouth of Shallow Bayou	25 Mar. 1932		
Keith Lake Gully, Texas		400 ft. Dam	24 Aug. 1932		Entrance to Keith Lake (PAC 9/15)
Leon River, Texas		Non-Navigable	5 Aug. 1932		Date of letter from Division Office
Los Olmos Creek, Tex.		Non-Navigable	24 Sept. 1935		
Navasota River, Texas		Non-Navigable	5 Aug. 1932		Date of letter from Division Engineer
Navidad River, Texas		Non-Navigable at a point 10,000 ft. upstream from highway bridge on present traveled route between Edna and La Hard	1 Nov. 1933		Bridge is at Texana. Letter to Department of Agriculture
Neches River, Texas	126	Navigable below mouth of Angelina River.	28 Oct. 1942		Letter to Senator Connally from OCE
Nueces River, Texas	48	Non-Navigable at Hwy bridge on Hwy between La Fruita and Sandia	10 Dec. 1931		Letter to Department of Agriculture
Oyster Creek, Texas	23		25 May 1932		
Pecan Bayou, Texas		Non-Navigable	31 Mar. 1932		
Pecos River, Texas		Non-Navigable	31 Mar. 1932		
Sabine River, Texas and La.	97	Belgrade, Texas	26 Apr. 1932		
San Antonio River, Tex.		Non-Navigable	5 Aug. 1932		Date of letter from Division Engineer
San Jacinto River, Tex.	121	Houston-Liberty Hwy. bridge	2 May 1932		

NAVIGABLE STATUS OF CERTAIN WATERWAYS
IN GALVESTON, TEXAS, DISTRICT

Page No. 3

Opinions by Office Chief of Engineers, (See correspondence file 2401/2395)

WATERWAY	HEAD OF NAVIGATION		DATE OF	REMARKS
	MILES:	DEFINITE POINT	OPINION	
	ABOVE:	CONSIDERED U.S. HEAD	OF	
	MOUTH:	OF NAVIGATION	C. OF E.	
San Marcos River, Tex.		Non-Navigable	31 Mar. 1932	
Shallow Bayou, La.	1	Upper landing, 5.5 miles from Sabine Lake	25 Mar. 1932	Prong of Johnson Bayou, La.
Simas Bayou, Texas	3		25 Mar. 1932	
Texas Bayou, Texas		Non-Navigable	12 Aug. 1938	OCE, 11th Ind
Turtle Bay, Texas		Non-Navigable	10 Mar. 1937	Act of Congress
Turtle Bayou, Texas		Non-Navigable	10 Mar. 1937	Act of Congress
White Oak Bayou, Tex.		Non-Navigable	19 Mar. 1935	

EXTRACT FROM THE TREATY OF 1970

MEXICO

**Treaty to Resolve Pending Boundary Differences and
Maintain the Rio Grande and Colorado River as the
International Boundary¹**

Signed at México November 23, 1970;

*Ratification advised by the Senate of the United States of America
November 29, 1971;*

*Ratified by the President of the United States of America
December 9, 1971;*

Ratified by Mexico January 24, 1972;

Ratifications exchanged at Washington April 18, 1972;

*Proclaimed by the President of the United States of America
May 2, 1972;*

Entered into force April 18, 1972.

With exchange of notes

Signed at México and Tlatelolco December 18 and 21, 1970.

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

CONSIDERING THAT:

The treaty between the United States of America and the United Mexican States to resolve pending boundary differences and maintain the Rio Grande and Colorado River as the international boundary was signed at Mexico City on November 23, 1970, the text of which treaty is annexed;

The Senate of the United States of America by its resolution of November 29, 1971, two-thirds of the Senators present concurring therein, gave its advice and consent to the ratification of the treaty;

The treaty was duly ratified by the President of the United States of America on December 9, 1971, and was duly ratified on the part of the United Mexican States;

It is provided in Article IX of the treaty that the treaty shall enter into force on the date of the exchange of ratifications;

¹The numbered footnotes herein were added by the Department of State.

later changes occur, in accordance with the provisions of this Treaty.

ARTICLE VIII

The following agreements shall be terminated as of the entry into force of this Treaty, without prejudice to any right, title or interest which has accrued thereunder except as otherwise provided in this Treaty with respect to such right, title or interest:

- A. the Convention Touching the International Boundary Line, signed on November 12, 1884; ^[1]
- B. the Convention for the Elimination of Bancos in the Rio Grande, signed on March 20, 1905; ^[2]
and
- C. to the extent that they are inconsistent with this Treaty:

(1) Article V of the Treaty of Guadalupe Hidalgo, signed on February 2, 1848; ^[3]

¹ TS 220; 24 Stat. 1011.

² TS 401; 35 Stat. 1863.

³ TS 207; 9 Stat. 920; 18 Stat. 494.

F. When in the limitrophe reaches of the Rio Grande and Colorado River, a part of the channel temporarily loses its character as the boundary by reason of the changes contemplated in paragraphs B and C of this Article, the international character of the use and consumption of those waters, in the order established under Article 3 of the Treaty of February 3, 1944, [1] shall not be modified.

ARTICLE IV

In order to reduce to a minimum the shifting of the channels of the Rio Grande and the Colorado River in their limitrophe sections, and the problems that would be caused by the separation of tracts of land, the Contracting States agree that:

- A. Each Contracting State, in the limitrophe sections of the Rio Grande and the Colorado River, may protect its bank against erosion and, where either of the rivers has more than one channel, may construct works in

¹ TS 994; 59 Stat. 1225.

